

# COMMERCIAL REFRIGERATION & AIR CONDITIONING

AUGUST 1955



**INDUSTRIAL REFRIGERATION**  
PACKAGED UNITS—ENGINEERED SYSTEMS

**CHEMICAL RESEARCH**  
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**CANDY MANUFACTURING**  
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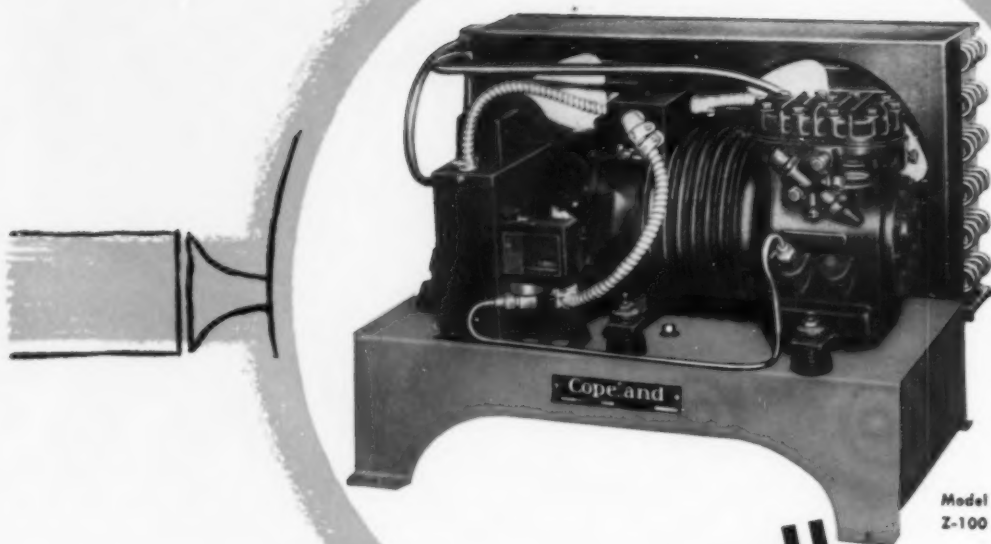
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**CABINET MAKING**  
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SILVENS RICE  
UNIVERSITY MICROFILMS  
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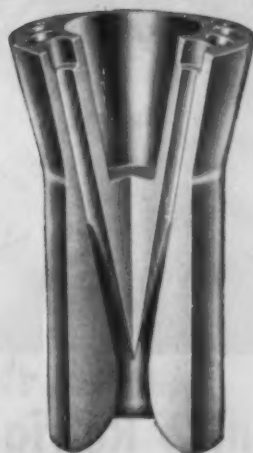
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AUGUST, 1955 • COMMERCIAL REFRIGERATION



# COMMERCIAL REFRIGERATION & AIR CONDITIONING

AUGUST 1955 • VOLUME 12 • No. 8

IN  
THIS  
ISSUE

## FEATURE ARTICLES

- 42 **"DON'T SKIMP ON COMPRESSOR CAPACITY"** . . . that's the sound advice offered by the maker of the famed "57 varieties" of foodstuffs to all who deal in perishable commodities.
- 44 **SERVICEMEN DOUBLE AS COLLECTORS** . . . in this bank-approved meter payment plan for commercial cases which has helped one Arizona dealer boost his business volume.
- 45 **GROCERY CHAIN CUTS OPERATING COSTS** . . . by installing remotely located air-cooled condensers for all refrigerated equipment.
- 46 **TWO-STAGE REFRIGERATION SYSTEM** . . . compensates for heat exchanger loss in this pilot operation conducted in one of the world's largest chemical plants.
- 48 **CLEVER SPECIAL-PURPOSE COOLING** . . . combining both air conditioning and refrigeration in a variety of tailor-made systems, eases production problems in this modern candy plant.
- 50 **ICE MAKERS BEAT GLUE "SET-UP" PROBLEM** . . . in this woodworking plant devoted to the production of radio and TV cabinets.
- 53 **IT HAPPENED IN OLD MEXICO** . . . but it had its start in the pages of this magazine. Here's how an article describing the refrigeration facilities of a Toledo, Ohio, fishery sparked the construction of a similar plant down "south of the border."

## Air Conditioning Section

- 83 **DISTRIBUTOR'S MAIL CAMPAIGN WINS AWARD** . . . and also builds sales of packaged commercial air conditioners.
- 86 **LUBRICATION OF AIR CONDITIONING MACHINERY** . . . The first of a two-part article outlining the "what—where—why—when—how" of this important subject.
- 90 **HOW TO SELECT AND USE ADVERTISING MEDIA** . . . This article "gets down to cases" in helping the air conditioning dealer establish an effective advertising program at the local level.
- 92 **STORAGE TYPE AIR CONDITIONING** . . . can help small compressors do big jobs, and it may be just the right answer for some of your "problem" applications.

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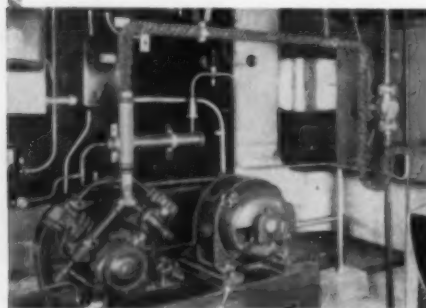
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WITH THIS PLIABLE,  
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8 1/2' of 3/16"



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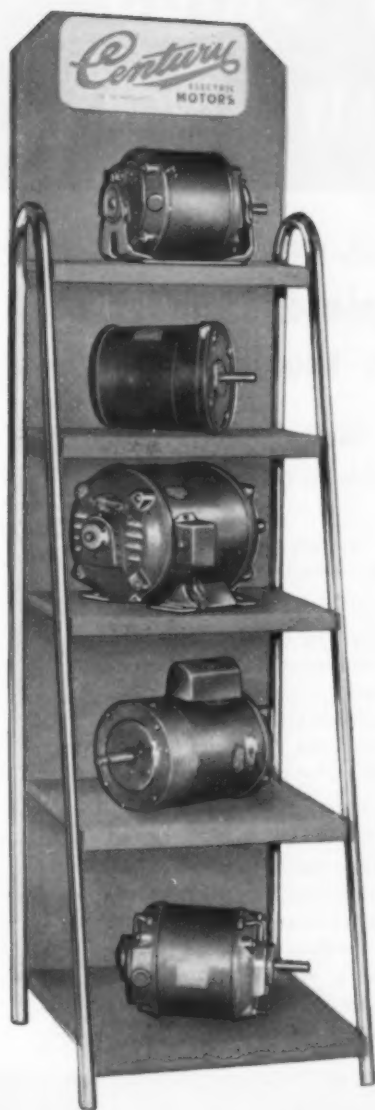
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# Two Powerful New Sales

## A New Brunner-Metic Warranty... with

If you **MANUFACTURE . . . or SELL . . . or SERVICE**  
it's the most simple . . . most complete . . . most  
satisfactory **WARRANTY PROGRAM** in the industry

Here is a Semi-Hermetic **WARRANTY PROGRAM** that really *protects* and  
serves the customer—yet is easily *workable* and *profitable* to the trade!

**BRIEFLY, HERE'S HOW IT WORKS:** 3 Cost of Brunner-Metic Five Year Protection Policy is based upon H.P. of unit involved.

1 **Standard One-Year Warranty**—Every Brunner-Metic customer is automatically protected by the Brunner-Metic "STANDARD ONE-YEAR WARRANTY." This warranty covers the complete unit and warrants any part of the unit against defects in material or workmanship occurring one year from installation date. No action by the manufacturer, customer or his agent is necessary to place the STANDARD ONE-YEAR WARRANTY in effect.

4 Customer, through his service agent, contacts his nearest Brunner-Metic wholesaler when replacement or repair of parts in warranty is necessary. Wholesaler will accept the part and sell new replacement part, from stock, at Exchange Price, plus freight. No red tape — no waiting for parts to come from factory!

2 **Five Year Protection Policy**—When a customer or his service agent applies for and purchases Brunner-Metic Five Year Protection Policy, then complete unit is protected for first year exactly as with Standard One-Year Warranty — and motor-compressor part is protected for four additional years.

5 If part is found defective under terms of warranty, Brunner refunds full credit and freight allowance for part exchanged to wholesaler — who credits service representative. Wholesaler is compensated by Brunner under terms of Warranty Agreement. Result: free replacement at Wholesaler's place of business.

**FOR COMPLETE DETAILS, SEND FOR YOUR FREE COPY OF NEW BOOKLET**

### WHAT THIS **BRUNNER-METIC** WARRANTY MEANS:

#### **TO THE CUSTOMER:**

**FASTER SERVICE** on replacement parts covered by warranty — regardless of origin of purchase of unit, nearest Brunner-Metic Wholesaler handles warranty transaction . . . F.O.B. his location. **SAVES MONEY:** customer saves on Brunner policy of paying freight both ways . . . on outgoing defective part and incoming replacement to wholesaler.

#### **TO THE MANUFACTURER:**

Greater customer confidence that leads to greater sales — because Brunner-Metic unit is backed by a sound, workable warranty. The Brunner-Metic unit in your product becomes a vital sales asset! If you carry your own warranty you can still utilize Brunner-Metic's nationwide warranty exchange program.

#### **TO THE SERVICE REPRESENTATIVE:**

The Brunner-Metic Warranty means satisfied customers — because you can give them the fast action they want when replacements in warranty are justified! Less work for you, too — you deal only with nearby Brunner-Metic wholesaler — not direct with factory!



# Features by

# parts depots across the nation

# BRUNNER

SINCE 1906

## The Brunner-Metic Warranty is backed and serviced by these Progressive Refrigeration Wholesalers

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BIRMINGHAM Budlock Refrig. Sup. Co.  
MONTGOMERY...Nolin-McInnis Co.

**ARKANSAS**  
FORT SMITH...Central Supply Co.

**ARIZONA**  
PHOENIX...Authorized Sup. Co.  
PHOENIX...State Equip. & Sup., Inc.

**CALIFORNIA**  
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EL CENTRO...Allied Refrig. Sup., Inc.  
FRESNO...California Refrigerator Co.  
GLENDAL...Arrow-Risco, Inc.  
LONG BEACH  
L. B. Marsh Allied Refrigeration Co.  
LOS ANGELES...Arrow-Risco, Inc.  
LOS ANGELES...Brea Supply Co.  
LOS ANGELES...Thermal Products, Inc.  
OAKLAND...Calif. Refrigerator Co.  
SAN BERNARDINO  
L. B. Marsh Allied Refrigeration  
SAN DIEGO...Allied Refrig. Sup., Inc.  
SAN FRANCISCO...California Refrig. Co.  
SAN GABRIEL...Arrow-Risco, Inc.

**COLORADO**  
DENVER...Thermo Supply Co.

**CONNECTICUT**  
HARTFORD...N. W. Day Sup. Co.  
HARTFORD...Joseph Simons Co.  
NEW HAVEN...Resco, Inc.

**DISTRICT OF COLUMBIA**  
DISTRICT OF COLUMBIA  
Refrigeration Supply Co., Inc.

**FLORIDA**  
JACKSONVILLE...Hajoca Corporation  
JACKSONVILLE...Refrig. Supply Co.  
MIAMI...Bowen Refrig. Sup., Inc.  
ORLANDO...R & R Supply Co., Inc.  
PENSACOLA...Cooling & Heating Sup.  
TAMPA...Hajoca Corporation

Leo S. Bosarge Co. of Tampa, Inc.  
**GEORGIA**  
ATLANTA...Leo S. Bosarge Co., Inc.  
ATLANTA...Bowen Refrig. Supplies, Inc.  
COLUMBUS...Hajoca Corporation  
MACON...Graves Refrigeration, Inc.  
SAVANNAH...Savannah Refrig. Sup. Co.

**ILLINOIS**  
CHICAGO...Service Parts Co.  
DECATUR...Potter Supply Co.

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SPRINGFIELD...R. H. Spangler Co., Inc.

**INDIANA**  
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CEDAR RAPIDS...Thermal Co., Inc.  
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**KANSAS**  
TOPEKA...Refrigeration Equip. Co.  
WICHITA...Refrigeration Equip. Co.

**KENTUCKY**  
LEXINGTON...Brock-McVey Co.  
LOUISVILLE...Mill Industrial Sup., Inc.

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BATON ROUGE...Acme Refrigeration  
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CLEVELAND  
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**WEST VIRGINIA**  
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HUNTINGTON...Mech. Refrig. Sup. Co.

**WISCONSIN**  
MADISON...B.T.U. Equip. & Sup. Corp.  
MILWAUKEE...Thermal Co., Inc.

### "THE BRUNNER-METIC WARRANTY PROGRAM"

#### TO THE WHOLESALER:

The Brunner-Metic Warranty Program Protects your interests—and your profit—through a fair, equitable compensation plan for you. And the good will generated by prompt satisfaction of warranty claims results in more sales for you.

#### GET THE COMPLETE STORY...

See your Brunner Man—or write us today for full information on this terrific business-building warranty!

Mail This Coupon TODAY for Free Booklet on BRUNNER-METIC WARRANTY

THE BRUNNER COMPANY, Dept. G-855, GAINESVILLE, GA.

I am interested in full details on Brunner-Metic Warranty Program

☐ Please send booklet

☐ Please have representative call

Name.....

Firm.....

Address.....

City..... State.....

☐ Manufacturer

☐ Service-Dealer

☐ Wholesaler

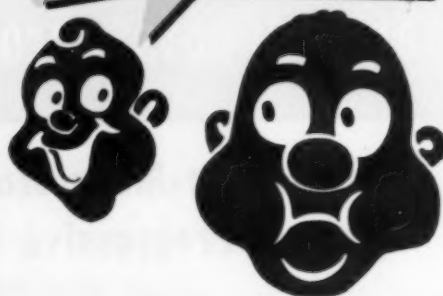
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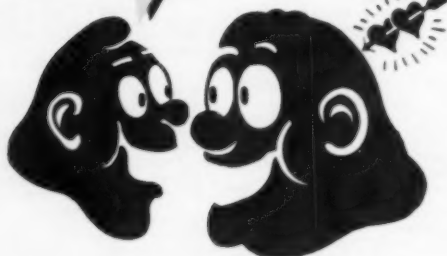
INCREASES EFFICIENCY!



GREATER SALES!



AND IT PAYS FOR ITSELF AS  
YOU PAY FOR IT MONTHLY!



Selling takes time—

**Time** makes selling easy!



To clinch more sales in less time, quote a *monthly payment*, not a *total cash price*. Many of your prospects need their working capital and usual lines of credit for current operations. No matter how much they need your equipment, they probably won't sign your order *now* unless you show them a convenient, practical way to pay. That's the COMMERCIAL CREDIT PLAN way. When can we tell you our story? Phone our office in your city or write COMMERCIAL CREDIT CORP., 14 Light St., Baltimore 2, Maryland.



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A service offered through subsidiaries of  
Commercial Credit Company, Baltimore...  
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States and Canada.



Which is the  
best way to  
air condition  
a HOUSE?



**WHEN THE HOUSE HAS A BASEMENT?** You can team this Carrier Conversion Weathermaker<sup>®</sup> with a warm air furnace. The cooling coil section fits on top of the furnace over the supply air outlet. See, it takes up no floor space! Slim copper tubing connects the cooling coil section with the refrigeration section which is located anywhere outdoors.



**WHEN THE HOUSE IS ON A SLAB?** This Carrier Conversion Weathermaker is the perfect mate to a counterflow furnace. The cooling coil section fits beneath the furnace, uses the furnace's fan and filters. Cooling is supplied by the refrigeration section. A special Carrier control panel interlocks the furnace and the Weathermaker so they operate as one.



**WHEN THE HOUSE IS OVER CRAWL SPACE?** The cooling coil section of this Carrier Conversion Weathermaker is designed for horizontal air flow. It pairs off neatly with a horizontal-type furnace, takes no space in the house. All Carrier Conversion Weathermakers are air-cooled; they need no water to carry off the heat absorbed by the refrigerant.

The man who sells Carrier always has the right answer

**IT'S GREAT TO BE  
A CARRIER DEALER!**



air conditioning • refrigeration • industrial heating

There's a Carrier residential Weathermaker to fit *any* home. You can sell summer cooling or year-round air conditioning. You can sell water-cooled or air-cooled models. You can sell a packaged air conditioner or a model with remote compressor and condenser. Whatever the home there's a Weathermaker to make the sale! Sign up with your nearby Carrier distributor now! If you don't know who your distributor is, write Carrier Corporation, Syracuse, New York. • Reg. U.S. Pat. Off.

**genetron 12**

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*in cylinders*

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**YES...genetron<sup>®</sup>**  
**ARE COLOR-CODED**

**genetron...**

*Super-Dry  
Refrigerants*

**genetron 11**

TRICHLOROMONOFUOROMETHANE

ORANGE LABEL

*in drums*

**genetron 141**

MONOCHLORODIFLUOROMETHANE

*in cylinders*

**GREEN  
LABEL**

# Super-Dry Refrigerants FOR YOUR CONVENIENCE!

It's always easy to know the contents of "Genetron" refrigerant cylinders or drums. That's because the top of each container is clearly marked with a distinctive color to identify which refrigerant it contains . . . and the labels are printed in matching colors to provide a double-check for you.

So, don't worry about learning long chemical names or confusing formulae. Just remember this: *In refrigerants, the name "Genetron" always identifies General Chemical's great line of "super-dry" refrigerants.*

And, the label color code always means:

- **WHITE LABEL** —DICHLORODIFLUOROMETHANE
- **GREEN LABEL** —MONOCHLORODIFLUOROMETHANE
- **ORANGE LABEL** —TRICHLOROMONOFUOROMETHANE

For speed, simplicity, convenience, buy . . . order . . . specify "Genetron" Refrigerants by color!

## GENERAL CHEMICAL DIVISION

ALLIED CHEMICAL & DYE CORPORATION

40 Rector Street, New York 6, N. Y.

Offices: Albany • Atlanta • Baltimore • Birmingham • Boston • Bridgeport • Buffalo  
Charlotte • Chicago • Cleveland • Denver • Detroit • Greenville (Miss.) • Houston  
Jacksonville • Kalamazoo • Los Angeles • Minneapolis • New York • Philadelphia  
Pittsburgh • Providence • San Francisco • Seattle • St. Louis • Yakima (Wash.)  
In Wisconsin: General Chemical Company, Inc., Milwaukee

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver



*America's Foremost Producer of Fluorine Chemicals*

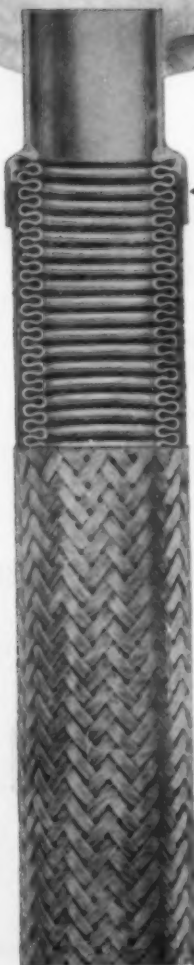
YOU'RE PROTECTED **3** WAYS  
WHEN YOU INSTALL

# AMERICAN

VIBRATION ELIMINATORS



**Installed clean, bright and dry.** The tough, water tight, polyethylene envelope preserves the factory built-in quality. When you're ready to install, the envelope is easy to remove, the Vibration Eliminator comes out bright, clean, and dry. Simplified installation instructions in each box make your job easier.



**Lasting, leakproof performance engineered and built-in at the factory.** The core is seamless, corrugated tin-bronze tubing, quality controlled through every manufacturing stage. This copper-tin alloy is specially engineered to stand up under vibration while carrying gases and liquids under pressure. Because the core is *seamless*, there are no joints or laps where leaks can start.

For extra strength and durability, the core is covered with bronze wire braid securely brazed in place. Sizes through 2" have a single wire braid covering, larger sizes a double braid covering for added strength.

Before it's shipped, the final assembly is pressure tested, oven dried, and sealed in a plastic envelope to keep out dirt and moisture.

**3** You know what you get when you insist on "American Vibration Eliminators" marked on the carton and "American" stamped on the ferrule of the assembly. To get quality—look for "American."

American Vibration Eliminators are sold by leading distributors everywhere. For descriptive folder of standard sizes with installation instructions, write to The American Brass Co., American Metal Hose Division, Waterbury 20, Conn. In Canada: The Canadian Fairbanks-Morse Company, Ltd.

55191

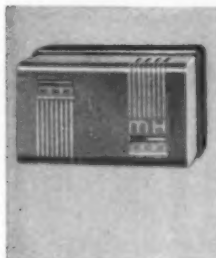


Circle No. 12 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION



# Build your business with the finest in the industry



For frozen food  
warehouses

**TA420 Frigistat.** A room thermostat for control of refrigeration and cooling machines. Heavy-duty snap acting contact. Corrosion resistant.



For cold storage  
cooling

**T420 Frigistat.** A mercury switch room thermostat. Ideal for pilot duty. Highly corrosion resistant. Protected by an extremely rugged case.



For large-building  
air conditioning

**T414 Temperature Controller.** A heavy-duty mercury switch device to cycle equipment by remote bulb temperatures. External adjustment screws.



For freezer plant  
refrigeration

**L413 Pressure Controller.** Cycles operation by controlling suction line pressure and provides high pressure cut off protection. Holds control point.



For warehouse  
cooling

**T491 Airswitch.** Especially useful when thermostat must operate under adverse conditions. The T491 is non-corrosive, mercury switch equipped.

## Honeywell Refrigeration Controls!

Honeywell offers you a complete line of high-precision refrigeration pressure and temperature controllers that are the quality standard of the industry. These are controls that you can feature as the finest money can buy—built to deliver the kind of trouble-free performance that means big savings to you and your customers. And yearly repair records prove these big savings! For of all Honeywell controls installed, only a very minute percentage are ever returned for repairs of any kind.

There are many good reasons for this long-lived service. Better materials, superior design, higher standards of production and inspection, a control point that won't shift, the use of dust-free mercury switches.

Honeywell Refrigeration Controls are built to function as precisely after thousands of cycling op-

erations as they did when new. You just put 'em in and forget 'em!

From your customer's standpoint, this kind of built-in dependability means a direct saving through reduction of maintenance and the elimination of improper cycling. And it safeguards his product investment by protecting against freezing, or relieves him of the worry of a disastrous thaw.

From your standpoint, these product advantages mean greater customer satisfaction—which results in more sales, and better business for you.

So build your business with the finest in the industry—Honeywell Refrigeration Controls.

For complete information on the entire Honeywell line of refrigeration controls, call your local Honeywell office. Or write Honeywell, Dept. CR-8-147, Minneapolis 8, Minnesota.

MINNEAPOLIS  
**Honeywell**

112 OFFICES ACROSS THE NATION



*First in Controls*

# EXCLUSIVE-PATENTED\* HOT GAS DEFROSTER

## LARKIN

## FROST-O-TROL

Hailed since 1948 as the most efficient automatic hot gas defroster ever devised, the patented Larkin Frost-o-Trol has a specially designed, factory-installed metering orifice which controls the amount of hot gas entering the evaporator, prevents any slug back, and assures rapid defrosting.

Frost-o-Trol is used only in Larkin low temperature Humi-Temps, the low side unit that takes the toughest cooling jobs in stride—from minus 32°F. sharp freeze rooms to 30°F. meat storage rooms.

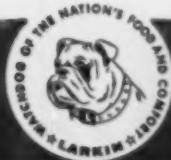
Check the price, check the installation cost, check the features with your wholesaler. He will explain why dealers from coast to coast have sold thousands of Larkin Humi-Temps with exclusive, patented Frost-o-Trol Automatic Hot Gas Defroster.

\*U.S. Patent 2,688,850

### Features That Sell and Satisfy

Compare these outstanding features of the Larkin Low Temperature Humi-Temp Unit with Frost-o-Trol Automatic Hot Gas Defroster. Every one is a sales help to you and every one builds customer satisfaction which results in repeat sales!

- Minimum temperature rise during defrosting
- Adjustable defrosting time
- No excess heat or moisture load
- Lower operating costs
- Higher efficiency of evaporator unit
- Heat applied throughout entire evaporator
- Melts frost from inside out
- Simple, low-cost installation
- Drip pan is electrically heated by a carbon impregnated, water-proof, molded rubber pad—assures positive drainage of melting ice and water—prevents freezing and spill-over
- Larkin patented Cross Fin coil—staggered tubing
- Heavy gauge die stamped aluminum case
- Self-locking nuts—vibration-proof assembly
- Rubber mounted motors with thermal overload protection
- Universal motor mounting to fit any NEMA motor



## LARKIN COILS

INC.

312 MEMORIAL DRIVE, S.E., ATLANTA, GA. — MAIN-3171

Circle No. 13 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION



Drivers can call office as well as receive calls from office.

## How RCA 2-Way Radio-Dispatched Service Pays Off in COOL Savings

...over 16% less travel time per call  
...up to 20% more calls per day

"Trucks are being routed faster, more calls per hour are being made with RCA 2-way radio," declares the vice-president of an air-conditioning service business in Washington. An executive of a refrigeration service company states, "Our average travel time per call has come down from nearly 3 miles to 2.5 miles. And calls per man per day have increased from 7.5 to an average of 9." Service men do a more efficient job, the customer is sold on your all-out performance.

Drivers can call the office as well as receive calls from the office, and they can talk to each other (if you want it that way). Office personnel can oper-

ate the radio—it's easier to use than your telephone. A truck can be reached whether it's moving or parked. It's just as if your dispatcher were alongside every man.

The installation of the RCA 2-Way Radio soon pays for itself... and then pays off daily in dividends of cool savings and extra profits that mount into thousands. The RCA reputation for engineering skill and all-out excellence of equipment assures long life and trouble-free performance.

The RCA Service Company provides installation and service on a nationwide basis.



Dispatcher controls every driver. Calls are dispatched immediately.



Service men do a more efficient job, have time for more calls.



**RADIO CORPORATION  
of AMERICA**

COMMUNICATIONS EQUIPMENT  
CAMDEN, N. J.

Use handy coupon for further information

Radio Corporation of America  
Communications Equipment, Dept. U-261, Building 15-1, Camden, N. J.

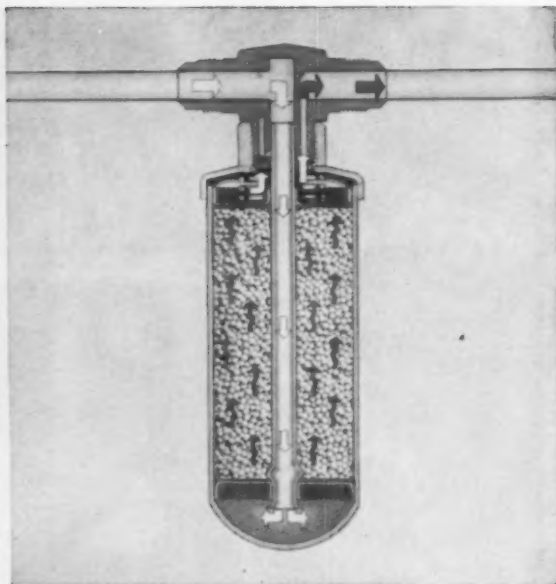
- ☐ Please send me your new booklet explaining profitable application of 2-Way Radio in service fields.
- ☐ Please have an RCA Communications Specialist call.

NAME \_\_\_\_\_ TITLE \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_ COUNTY \_\_\_\_\_  
CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Circle No. 14 on Reader Service Card



The pink color in the Dry-Eye Connector window changes to blue when T-Flo Cartridge removes excessive moisture.



Note path of refrigerant through uniformly round pellets of Andrite in the T-Flo Dry-Eye Cartridge.

## Dry-Eye System tells at a glance if refrigerant is wet or dry



Once the Ansul Dry-Eye System is installed you can replace the T-Flo Cartridge without breaking the line.

**Takes the guesswork out of refrigerant servicing ... controls moisture, removes acid**

No more guessing—now you can tell scientifically if the refrigerant is *wet* or *dry*. If the Dry-Eye Connector window shows *blue*, the equipment is in a safe operating condition. If the window shows *pink*, excessive moisture is present. To remove the moisture, simply change the T-Flo Dry-Eye Cartridge. That's all there is to it.

Andrite, the drying agent used in the T-Flo Dry-Eye Cartridge, is superior to all other popular desiccants in the deep drying range. This is the range which determines the quantity of desiccant to be

used. As for acid removal, Andrite will pick up 4.5% of its weight in acid when completely saturated with water. The extraordinary drying capacity of the T-Flo Dry-Eye Cartridge allows you, in many cases, to install smaller driers than the ones you are now using.

Test-try the Ansul Dry-Eye System on one of your "problem" units. See if it doesn't make servicing easier, more profitable. Contact your local Ansul wholesaler for a supply of Dry-Eye Systems. **ANSUL CHEMICAL COMPANY**, Dept. D-22, Refrigeration Div., Marinette, Wisc.



# ANSUL

Circle No. 15 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION



# READING

## "LEKTROSEAL"

### COPPER REFRIGERATION TUBE

#### ***FIRST STEP in a Quality Installation—***

Soft temper for easier forming . . . dehydrated — with crimped ends to seal out all moisture and dirt . . . and keep the inside surface absolutely clean. Comes in handy 50-foot coil packed in its own convenient protective carton, clearly labeled for easy identification. To be sure of the job—be sure to specify Reading.



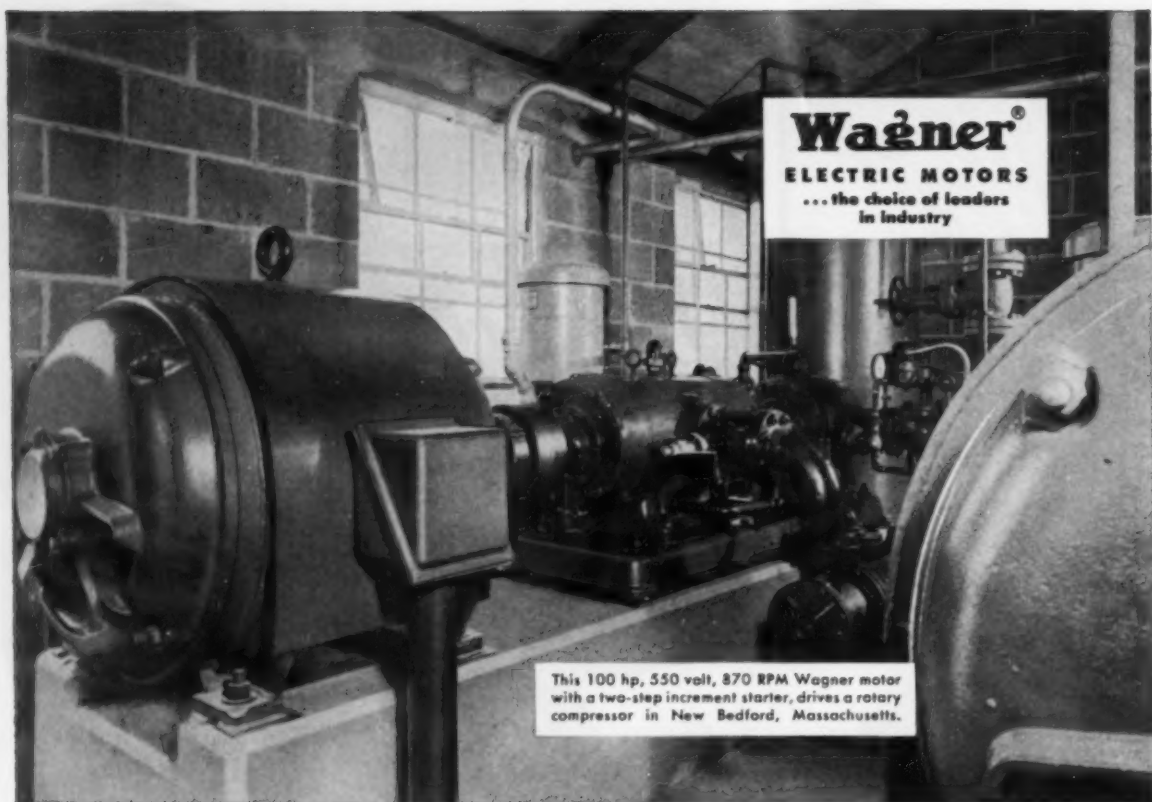
#### **READING TUBE CORPORATION**

EMPIRE STATE BLDG., NEW YORK 1, N. Y. PLANT: Reading, Pa.

##### Distribution Depots:

- READING, PA.
- WOODSIDE, L. I., N. Y.  
57-17 Northern Blvd.
- CHICAGO, ILL.  
724 W. 50th St.
- DENVER, COLO.  
2845 Walnut St.
- HOUSTON, TEXAS, 1121 Rothwell St.
- ATLANTA, GA., 690 Murphy  
Ave., S.W., Unit 5, Bldg. B
- CLEVELAND, OHIO  
4675 Perkins Ave.
- LOS ANGELES, CALIF.  
120 Santa Fe Ave.





**Wagner®**  
ELECTRIC MOTORS  
... the choice of leaders  
in industry

This 100 hp, 550 volt, 870 RPM Wagner motor with a two-step increment starter, drives a rotary compressor in New Bedford, Massachusetts.

## Start large polyphase motors with minimum line voltage disturbance USE THE **Wagner** INCREMENT MOTOR AND STARTER COMBINATION

Here's a modern, economical, highly efficient way to start large polyphase motors—the Wagner Increment Motor and Starter "Package."

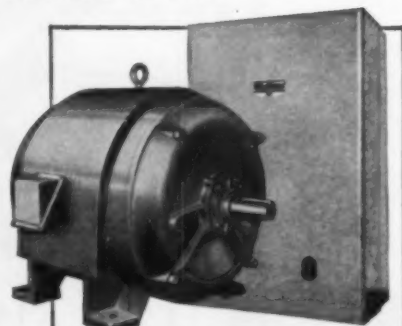
By reducing current drawn from the line on each point of the starter, the combination limits the inrush of motor current to values that are acceptable for the distribution systems of most power companies.

Voltage disturbances on the line are reduced because current taken from the line is not broken during the starting period—as it is when auto-

transformers or compensator type starters are used.

Wagner two-step increment motor and starter combinations are suitable for most applications. For installations where unusually low inrush of starting current is desired, Wagner can furnish three-step and four-step increment starters.

Your nearby Wagner engineer will help you select the increment motor and starter combination that meets your requirement. Call the nearest of our 32 branch offices, or write us.



Type RP polyphase motor in ratings to 400 hp with increment type starter



**Wagner Electric Corporation**  
6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

655-16

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES • AUTOMOTIVE BRAKE SYSTEMS—AIR AND HYDRAULIC

Circle No. 17 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION

G. A. I.

# RUBATEX Insulation Hardboard *makes more cents* \*

"K" Factor 0.21

Zero Moisture Pick-Up

No Vapor Barrier Needed

Light Weight—4.5 p. c. l.

Average Compressive  
Strength—60 p. s. i.

... eliminates  
maintenance costs  
at MARIGOLD DAIRIES



Over five years ago Marigold Dairies, Incorporated, Rochester, Minnesota, insulated the walls, ceiling and floor of their Ice Cream Hardening Room with Rubatex Insulation Hardboard.

Rubatex was selected for its exceptional insulating and structural properties — its ability to maintain constant room temperature of -40 degrees F. . .

*Write us* about your low temperature insulation application.

Let us show you how Rubatex Insulation Hardboard can make more cents for you — more cents in performance — more cents in production and power savings.

\* Plus the fact that Rubatex Insulation Hardboard eliminates maintenance costs of repair and painting. According to R. E. Graupmann, President of the firm, this in itself makes more cents in year-in and year-out savings for Marigold Dairies.



**GREAT AMERICAN INDUSTRIES, INC.  
RUBATEX DIVISION**

# ABOUT PEOPLE



**John H. Holton**, a vice president of Carrier Corp. since 1942, will head a new central planning division of the company. The division will coordinate departmental planning and will do long term planning for the corporation as a whole. For the past two years, Holton has been vice president and general manager of the Unitary Equipment division. He will be succeeded in that capacity by **Russell Gray**, vice president, who was previously assistant general manager of that division.

**A. J. (Joe) Lane**, formerly with Walker-Martin Inc., Raleigh, N. C., has been named district manager of the Atlantic central area for Dole Refrigerating Co., and **Robert H. Tafel**, formerly with Col-Flake Corp., Chicago, has



A. J. Lane R. H. Tafel

joined the company's sales staff at Chicago. Lane is president of the Southern Regional Association of the Regional Service Engineers Society, recently resigned from the Greer Training School where he instructed an applications engineering course.

**Richard Stewart** has been appointed sales engineer for Bush Mfg. Co. and Heat-X, Inc., with territory innortheastern Ohio. He was previously in application engineering for the air conditioning department of General Electric Co., and then was chief engineer for a Baltimore contractor.



**Robert R. McKellar** has been appointed New York district sales manager of Connor Engineering Corp. He was formerly with J. O. Ross Engineering Corp. as sales engineer for New York and New Jersey.

**William R. Morrissey** has been appointed sales representative in Chicago and surrounding areas for Wolverine Tube, Div. of Calumet & Hecla, Inc., handling aluminum and steel accounts, according to



an announcement by E. J. Campbell, midwestern district sales manager. Morrissey, formerly with American Manganese Steel Div., American Brake Shoe Co., will headquarter in Wolverine's Chicago office.

Appointments of **Frank R. Spratt**, **Craig C. Stirewalt**, **Donald R. Starin**, and **Lewis G. Elia**, to various posts have been announced by Day & Night Div., Carrier Corp. Spratt, formerly Southern California sales manager, has been advanced to regional manager of the state. Stirewalt, who has been serving as sales representative in the San Diego and Santa Ana areas, be-

comes sales manager for Northern California. Starin, for seven years with Alhambra Sheet Metal Co., joins the staff of the division's sales engineering department, as also will Elia who was formerly in the development engineering department.

Peerless Pump Div., Food Machinery & Chemical Corp., has announced the appointments of



C. L. Nickel N. C. Olson

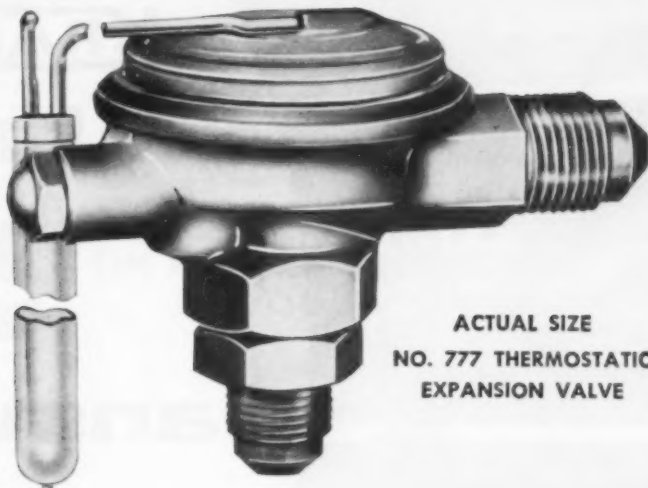
**Carl L. Nickel** as product sales manager, water systems and dealer line products, and **Norman C. Olson** as product sales manager, engineered line products. Both have been with the division since 1946. Nickel was previously a product sales manager and Olson was previously branch manager of the firm's Chicago office.

**Everett G. Reid, Jr.**, has been appointed zone sales manager for Sherer-Gillett Co., in the Chicago territory including all of Illinois and southern Wisconsin. He joined the company in 1953 as a distributor and previously worked for Grand Union Co., chain store system, in a training program and in research.



**William F. Kelly** has been assigned to the New York district office of the Du Pont Company's "Kinetic" Division as sales correspondent, a new position created to serve that area's customers for "Freon" refrigerants and aerosol

# for TOP Efficiency in a small package . . .



ACTUAL SIZE  
NO. 777 THERMOSTATIC  
EXPANSION VALVE

## *Specify* **DETROIT CONTROLS 777 Space Saver** *Expansion Valves*

### SIZE

Only 2¾" high! Connections: Inlet, ¼ and ⅜ S.A.E. (inter-changeable); outlet, ½ S.A.E. and ¼ F.P.T. Capillary tube 60 inches. Large inlet strainer can be cleaned on the job. Superheat adjustment easily accessible.

### CAPACITY

777: ⅜ to 2 tons F-12, 1 to 3½ tons F-22. 777-E, with external equalizer: 1 to 3 tons F-12, 1 to 5 tons F-22. Conversion of 777-E from external to internal equalizer quickly and easily made on the job.

### CONSTRUCTION

Rugged as it is compact! Large standard wrench flats, polished flare faces, anchored capillary and ball-type needle and seat assembly add to the performance characteristics at every step!

### APPLICATION

The 777 has a very broad range of uses. In addition to the standard liquid charged valves, 777 is available with C or Z cross charges where motor protection is needed. It can be mounted in any position. Models are available with pressure limiting, internal or external equalizers.

For more profits . . . more customer satisfaction . . .  
USE, SELL, INSTALL DETROIT CONTROLS 777 "Space Saver".

**DETROIT CONTROLS CORPORATION**  
8900 TRUMBULL AVE. • DETROIT 8, MICHIGAN  
Division of AMERICAN RADIATOR & STANDARD SANITARY Corporation



Representatives in Principal Cities • Canadian Representatives:  
RAILWAY AND ENGINEERING SPECIALTIES, LTD.,  
Montreal, Toronto, Winnipeg.

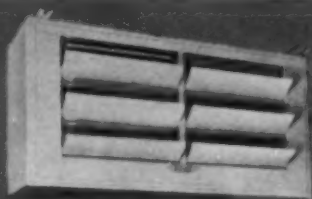


### AUTOMATIC CONTROLS for REFRIGERATION

AIR CONDITIONING • DOMESTIC HEATING • AVIATION • TRANSPORTATION • HOME APPLIANCES • INDUSTRIAL USES

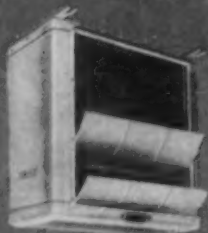
Circle No. 19 on Reader Service Card





### COOLMASTER

10,000 to 60,000  
BTU/HR



### KAY-TEE

2,500 to 12,000  
BTU/HR



### LARGE CURVETTE

3,000 to 20,000  
BTU/HR



### COIL & BAFFLE

STOCK SIZES for  
Immediate  
Delivery

# **KRAMER**

## has

# 5

## answers to cool a 35° room

WRITE FOR  
CATALOG K-300



### RADIAL

2,500 to 23,000  
BTU/HR

## KRAMER TRENTON CO. • Trenton 5, N.J.



propellents. Succeeding him as sales correspondent for refrigerant sales to equipment manufacturers is **Richard D. Goss**. Kelly joined Du Pont in 1939. Goss joined Du Pont in 1941.



**S. Byron Stone** has been appointed advertising and sales promotion director of Typhoon Air Conditioning Co., Inc. At various times, he has directed advertising and promotion for industrial machinery, audio products, electronic computers, lawn mowers, and welding alloys, and was responsible for the organization and direction of the public relations program publicizing the International Machine Tool Exhibition, held in 1953 in Olympia-London for the British Industries Corp.



**Otto (Lee) Liepin** has been appointed regional refrigeration representative for the New York office of General Controls Co. He joined the organization in 1951 as a refrigeration sales engineer for the Philadelphia territory, was promoted to assistant branch manager in 1952 and branch manager in 1953. He now will cover the New England, New York, Philadelphia, and Baltimore territories.

**Richard K. Trask** has been named manager in charge of distributor and acoustical sales of L.O.F. Glass Fibers Co. He had been in sales for Glass Fibers Inc. which recently merged with the new L.O.F. Glass Fibers Co. Previously he had been a physicist with the Battelle Memorial Insti-

tute at Columbus, Ohio, and an instructor at Case Institute of Technology.

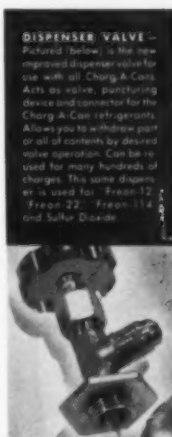
**E. T. Kinney** has been appointed south central district sales manager by the Bally Case & Cooler Co., covering the states of Tennessee, Alabama, Mississippi, Arkansas and Louisiana. He was previously sales manager for the Mid-South Fixture Co., Memphis, a Bally distributor.

**William Gibb, Jr.**, chief accountant of Flexible Tubing Corp., has been elected secretary of the corporation. Gibb joined Flexible Tubing in 1950.

**H. M. "Bud" Westerman** has been appointed a sales representative for Brunner Mfg. Co. of Utica, N. Y., and Brunner Co. of Gainesville, Ga. He will be in the Philadelphia office and will call on automotive and refrigeration accounts

## THE PACKAGED REFRIGERANT THAT SAVES YOU TIME AND MONEY!

USE IT AND THROW AWAY THE CONTAINER...



**DISPENSER VALVE**—Pictured (below) is the new improved dispenser valve for use with all Charg-A-Cans. Acts as valve, penetrating device and connector for the Charg-A-Can refrigerants. Allows you to withdraw part or all of contents by desired valve operation. Can be reused for many hundreds of charges. This same dispenser is used for Freon-12, Freon-22, Freon-114 and Sulfur Dioxide.



Now you can get "Freon-22" in popular and convenient Charg-A-Cans. These disposable 2-pound cylinders give you all the well-known advantages of Eston packaged refrigerants—convenient to carry, safe and easy to use. "Freon-22" Charg-A-Cans are filled under carefully controlled factory conditions, with material expertly analyzed for purity and moisture content. Packed 12 cylinders to the shipping carton. "Freon-22" in the disposable cylinder is the practical and economical answer to your refrigerant needs. Stock up today!

No Deposit—  
No Waste—  
Controlled Purity—  
Accurate Measuring—

**Now Available—  
"FREON-22"  
in Charg-A-Can  
DISPOSABLE CONTAINERS**

ESTON CHEMICALS DIVISION

**American Potash & Chemical Corporation**

Offices: • 2100 East 26th Street, Los Angeles 23, California  
• 99 Park Avenue, New York 16, New York

Other offices: DETROIT • CHICAGO • DALLAS • ST. LOUIS • ALBANY • ATLANTA • DENVER • SEATTLE

Circle No. 21 on Reader Service Card

of both companies. He was general service manager with the Judson C. Burns Co., in Philadelphia for 20 years.

**Norman Roossin**, representative for the commercial line of Jordon Refrigerator Co. in California, Washington, Oregon and Nevada, has been appointed to represent the firm in Arizona also. **Jerry Kaufman**, Jordon representative in western Pennsylvania and west-

ern West Virginia in the domestic line, will also now handle the commercial line in the same territory. **Joseph Dwight Rittenhouse** will represent both the domestic and commercial lines in Ohio.

**William P. Haney**, formerly sales department representative of Taco Heaters, Inc., in Rhode Island and southeastern Massachusetts, has been transferred to the Chicago territory. He will be suc-

ceeded by **Joseph P. Burns**, a recent addition to the organization.

**William J. Davies** has been named to succeed **Robert J. Laidlaw** as district manager of Worthington Corp.'s Cleveland, Ohio, office. Davies joined the company in 1937 as a sales trainee, and since has served as a sales engineer in Buffalo, N. Y., as well as in Cleveland. Laidlaw, whose retirement was brought about by ill health, joined Worthington in 1919.

**Bob Carow** has been appointed representative of Marlo Coil Co. in West Texas. He has headed his own engineering firm in Lubbock since 1953, and is currently president of the West Texas chapter, American Society of Heating and Air Conditioning Engineers.

In two executive changes at U. S. Air Conditioning Corp., **L. P. Hanson** has been named to the newly-created post of administrative vice-president and **R. P. Kelley** has joined the firm as general sales manager. Hanson, who has served since 1947 as vice-president



L. P. Hanson



R. P. Kelley

in charge of sales, will function as assistant to the president and as vice-president in charge of engineering. Kelley was formerly vice-president and manager of the appliance division of Motor Power



*"Enthusiastic every-day users"*

Enthusiasm naturally follows outstanding results. The experience of Frank Hunt with Thawzone is not unusual. It is typical of that of thousands of service men throughout the country.

Thawzone is the most efficient method of handling moisture problems... and, not only that, it is the **QUICKEST** method. Just a minute or two of "on" cycle and Thawzone has reached every part of the system, **DESTROYING** moisture permanently. Your work is done in from 5 to 20 minutes. Can you do this by the use of any other method?

**THAWZONE**

The Only Product That **DESTROYS** Water... and Reaches **ALL** of it

December 13, 1954.  
Highside Chemicals Company,  
10 Collax Avenue,  
Clifton, N. J.  
Gentlemen:  
We are truly enthusiastic every-day users of your product, Thawzone, in our household and commercial jobs, and find it indispensable.  
We cannot praise your product enough. With best wishes for the Christmas Holidays and success in the New Year, I am,  
Cordially yours,  
*Frank Hunt*

1. Actually destroys moisture... not a mere anti-freeze.
2. Scavenges oxygen... the only product that eliminates this corrosion-causing chemical.
3. Cannot cause pressure drop.
4. Cannot clog with oil.
5. Does not release moisture when temperature changes.
6. May be used in open or hermetic units containing "Freon", methyl chloride, methylene chloride, or isobutane.
7. Costs only about 8 cents per lb. of refrigerant treated. Used in small amounts.

You can use Thawzone in practically any "Freon" or methyl unit. Your wholesaler has Thawzone. Phone him now. Highside Chemicals Company, a unit of Stewart Industries, Inc., 4 Collax Ave., Clifton, N. J.

Equipment Co. Prior to that he served as national sales manager of the General Mills home appliance division and as a district supervisor and merchandise manager for Westinghouse Electric Co.

**Fred E. Schmuck**, formerly sales manager of the boiler, radiator and air conditioning division of U. S. Radiator Corp., has been appointed national sales manager for Drayer-Hanson, Inc. The latter company is a subsidiary of the recently-formed National-U. S. Radiator Corp. In his new job, Schmuck will be responsible for distribution, sales, service and advertising promotion.

**O. Fred Peterson** has been appointed national sales engineer of Victory Metal Mfg. Corp. He was formerly associated with another refrigeration concern, and previously was connected with advertising agencies in the promotion of a diversity of products. During World War II, he was a contract negotiator on behalf of Sikorsky aircraft.

**A. B. Kennison**, a consultant in product design, has been elected a vice-president of Servel, Inc., and will serve as coordinator of research and product development. For the past four years, Kennison was a vice-president and director of Ethicon, Inc., a major subsidiary of Johnson & Johnson, and has been in charge of the firm's product and development division. In his new job, Kennison will coordinate activities relating to re-

search, engineering and planning of civilian products, including refrigerators, air conditioners, refrigerettes and freezers.

New managers have been appointed for three field offices of Minneapolis-Honeywell Regulator Co. **O. V. Spousta**, manager of the Louisville branch office since 1947, will manage a new office in Hammond, Ind. **W. C. Waltman**, manager of the South Bend office

since 1952, will succeed Spousta at Louisville. **George Rossiter**, who has been industrial controls sales manager at Indianapolis, will replace Waltman as manager at South Bend.

**Richard B. Stranahan**, who recently joined Schaefer, Inc., Minneapolis, as central divisional manager for food freezers, has been appointed sales manager of the "Pak-A-Way" division. He



You're Always Sure of The Correct Tool with

## DURO-CHROME Refrigeration Tools

### 72-Piece Complete Set—or Choose a Piece at a Time

Refrigeration service men who want to be sure of doing jobs easier—better—faster, use these Duro-Chrome Refrigeration Tools—each one designed for a specific job. Include range of sockets, hexagon, square and special purpose, with the famous Duro-Chrome Reversible Refrigeration Ratchet and extensions. Also tools to bend, cut and flare tubing, with special flare nut box

wrenches to turn flare nuts without distorting the flare joint. The box wrenches, amber handled screw drivers and long type hexagon set screw wrenches include all sizes used on compressors, motors and controls. All complete in green hammerloid sturdy enameled finish metal box, with handy lift-out tote tray. These Duro-Chrome Refrigeration Tools can also be brought separately, if you prefer.



Get Your  
**DURO-CHROME**  
Pocket Catalog

Y-422

ASK YOUR DURO JOBBER—for a free copy of the Pocket-Size Duro-Chrome Tool Catalog; or send 10c in coin, with coupon below, to Duro Metal Products Co.

MAIL COUPON FOR DURO-CHROME POCKET-SIZE CATALOG

**DURO METAL PRODUCTS COMPANY**  
2649 N. Kildare Ave., Chicago 39, Ill.

Please send my copy of the DURO-CHROME Pocket-Size Catalog for which I enclose 10c in coin to cover costs of postage and handling. Address to me, personally.

My Name \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

ALSO MAKERS OF NATIONALLY ADVERTISED DURO POWER TOOLS

Circle No. 23 on Reader Service Card

was previously regional manager for Deepfreeze, served for several years as sales manager for Triangle Industries, and has been associated with Commonwealth Edison Co., in Chicago.

**Patrick J. Shea** has been appointed product manager for Brewer-Titchener Corp., refrigeration division, serving in a sales engineering capacity, with emphasis on production and shipment of

refrigeration cabinets. He was at one time with Carrier Corp. as a sales engineer, and with Trans Co., as a sales engineer.

**Francis G. Murray, Jr.** has been named sales representative in Baltimore for heating and air conditioning equipment manufactured and distributed by National-U. S. Radiator Corp. Murray was most recently selling products of Bethlehem Steel Co.

**John A. (Jack) Green** has been appointed manager of distributor sales for Viking Air Conditioning Div., National-U. S. Radiator Corp. He will have charge of the nationwide sale of Viking products to distributors. Green joined Viking in 1946, later becoming sales representative in southern Ohio. He was transferred to New England and New York City until 1953, when he was recalled to Viking headquarters in Cleveland.

**Robert I. Pearce** has been appointed director of training for Amana Refrigeration, Inc. He will organize and direct sales training activities for dealers and distributors, and will also direct executive training. He succeeds **W. J. Dickinson** who was recently placed in charge of Amana's new key accounts department.

**Dr. Donald Q. Kern** has been appointed by Wolverine Tube, Div. of Calumet & Hecla, Inc., as consultant in the field of heat transfer. He has served for many years as design engineer for several manufacturers of heat transfer equipment, including Foster Wheeler Corp., and Patterson Foundry & Machine Co.

**James W. Foley** has been elected executive vice president of Texas Co. Foley was elected a vice president early in 1953, and a director in September, 1954.

#### OPENS TAMPA BRANCH

A new branch office, located in Tampa, Fla. has been opened by Trane Co. I. L. King, who has been associated with the Trane office in Gainesville since 1948 has been appointed to the new branch.



**Only PA<sup>®</sup> 400**  
**gives you all the required qualities**

- HIGHEST CAPACITY ● PHYSICAL ADSORPTION NOT CHEMICAL ACTION
- DRIES REFRIGERANTS TO BELOW 2PPM AT 120°F. ● ADSORBS ACIDS ● NON-DUSTING
- MINIMUM PRESSURE DROP ● NON-DELIQUESCENT ● NO CHANNELING

Progress Through Chemistry

**DAVISON CHEMICAL COMPANY**

DIVISION OF W. R. GRACE & CO.

Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Superphosphates, Triple Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO<sup>®</sup> Granulated Fertilizers.

Circle No. 24 on Reader Service Card





EL SIROCCO  
Deerfield Beach, Florida

#77 MOTEL  
Beatrice, Nebraska

EL RANCHO MOTEL  
El Paso, Texas

MOTEL DE VILLE  
New Orleans, Louisiana

TALLY HO MOTEL  
Valley Forge, Pennsylvania

## The Swing's to Spotaire!

COX'S MOTEL  
Fairfield, Illinois

BEDFORD MOTEL & INN  
Bedford, Mass.

PYRAMIDS MOTEL  
Las Vegas, Nevada

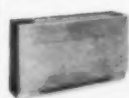
MEADOW ACRES MOTEL  
Topeka, Kansas

### drayer-hanson refrigerated zone-controlled AIR CONDITIONING

Wilbur Clark's Desert Inn, at fabulous Las Vegas, sparked the trend to D-H Spotaire air conditioning. The Sands, The Thunderbird, The Flamingo, and others, soon followed suit. Now, hotel and motel owners and managers the country over—large and small, in "new" construction and "old"—acclaim the safe, n-saving advantages of cooling and heating... ventilating and filtering... the Spotaire system way. Spotaire gives all-out performance. Its operation is service free. No expensive ductwork! No need to condition areas not in use! No compressor noises nearby—other mechanical equipment remotely placed! Just that breeze-easy Spotaire way of letting each guest be his own weatherman—and to his exact specification, by a mere flick of the switch.



SPOTAIRE HMC SERIES  
Compact blower and coil unit for concealed, overhead, installation in each individual room.



SPOTAIRE VRC SERIES  
Handsome console models, or recessed types, for individual-room installation.



A colorful brochure is yours, free. Write,

**drayer-hanson**  
INCORPORATED

3301 MEDFORD STREET, LOS ANGELES 63, CALIFORNIA  
(SUBSIDIARY OF NATIONAL U.S. RADIATOR CORP.)

Circle No. 25 on Reader Service Card  
& AIR CONDITIONING • AUGUST, 1955

# 336,000

## miles of extrusions!



Our extruders have turned out enough plastic and rubber extrusions to reach to the moon and halfway back. In compiling this vast experience General Tire's Industrial Products Division has supplied thousands of original equipment manufacturers with just about every known type of extrusion. No job is too large, too small or too complicated for our design and production staff. Perhaps you can benefit from the fantastic extrusion mileage we've accumulated down through the years.

For literature or further information write to The General Tire & Rubber Company, Wabash, Indiana, Department B-1.

"From Plans to Products  
in Plastics and Rubber"

THE  
GENERAL  
TIRE

Industrial Products Division  
WABASH INDIANA

Circle No. 26 on Reader Service Card





# OLD SOL + SERVEL SUPERMETIC = Super Summer Profits!

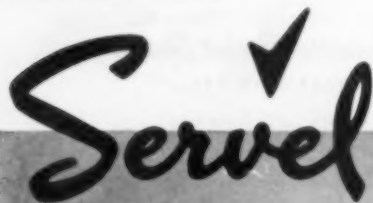
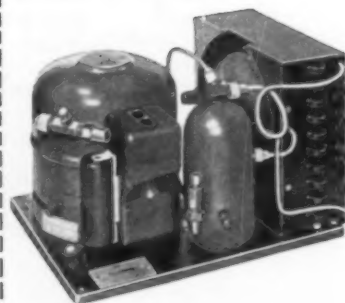
**WHATEVER THE APPLICATION . . .** whether a new or replacement installation — here's how to make your big hot-weather business bigger and better than ever:

## **CASH IN ON THE ADDED SALESPower OF "POWERED BY SERVEL"!**

Cash in on the unequalled quality for which SERVEL SUPERMETICS® are famous; the extra compactness and quiet operation . . . the plus protection of Servel's unique built-in lubrication. Cash in on the quicker, easier, **more profitable** installations made possible by SUPERMETIC simplified design. Cash in on the extra-ready availability of SUPERMETICS and all installation supplies from more than 100 conveniently located Servel Authorized Wholesalers — AND on Servel's low-cost Factory Warranty available with all current models!

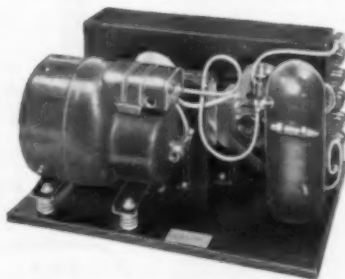
Servel hermetic condensing units for expansion valve or capillary tube type systems, and hermetic power units are available in all popular sizes from 1/4 through 7 1/2 H. P. Write today for complete set of Supermetic model specifications.

**SERVEL, INC.**  
Commercial Refrigeration Division  
Evansville 20, Indiana

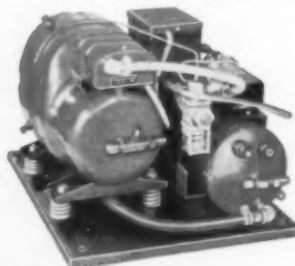
**1/2-HP SERVEL SUPERMETICS**

Widely used in self-contained fixtures, beverage coolers, water coolers, ice-cream cabinets, home freezers, display cases, and reach-in refrigerators.



**3/4-HP SERVEL SUPERMETICS**

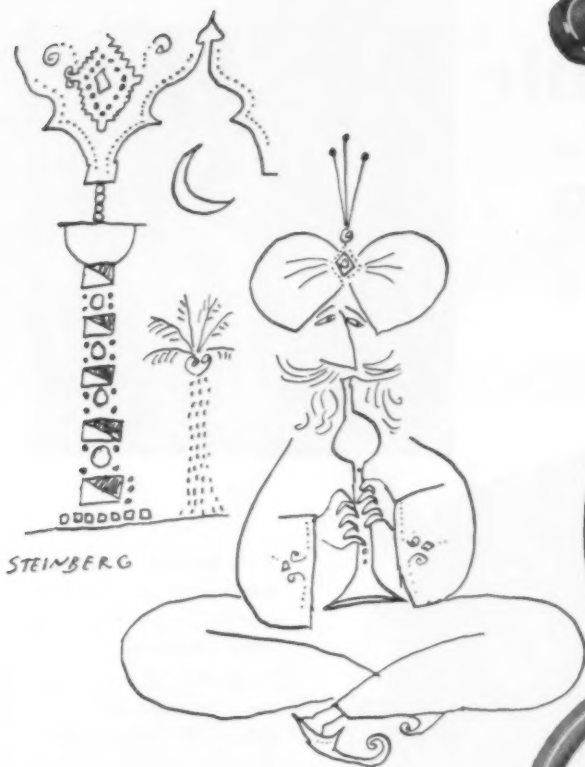
Sturdily constructed, compactly designed for a multitude of uses such as small walk-ins, large display cases, reach-ins, and dairy coolers.



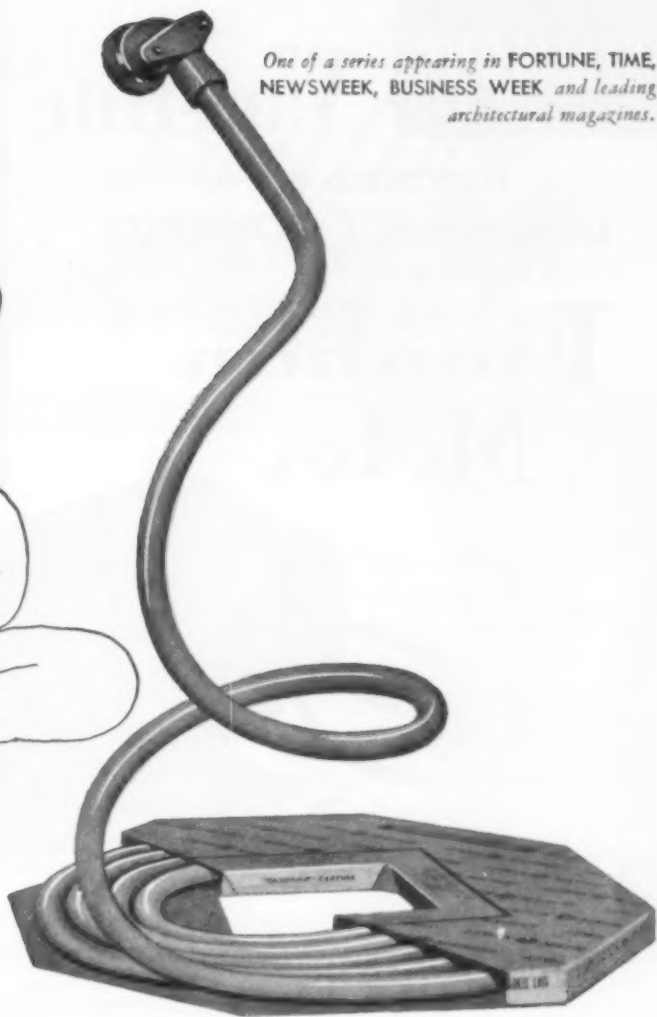
**1-HP SERVEL SUPERMETICS**

This hermetic unit will fill the needs of a very large majority of retail dairies, water-cooling systems and walk-in coolers in food establishments. Its water-cooled design makes it particularly suited to warm locations.

**THE NAME TO WATCH FOR GREAT ADVANCES  
IN REFRIGERATION AND AIR CONDITIONING**



One of a series appearing in FORTUNE, TIME, NEWSWEEK, BUSINESS WEEK and leading architectural magazines.




discipline

*We discipline copper.*

We put it through the roaring heat of our own smelter . . . the high-amp stillness of electrolytic refining tanks . . . the irresistible pressures of piercing mills and extrusion presses . . . the long reaches of our drawbenches . . . through coiling, annealing, straightening and testing equipment.

We work our will on copper—through every chemical change, every physical gyration known or needed—to deliver it perfect and enduring, yet submissive . . . as Lewin-Mathes seamless tube, pipe and fittings.

Like the ancient coppersmith, our pride of product is that of the *integrated specialist*. And the Lewin-Mathes nation-wide supply facilities serving you, we believe, are second to none.

**LEWIN  MATHES**  
SAINT LOUIS, MISSOURI  
MANUFACTURERS OF  
COPPER AND BRASS TUBE, PIPE, ROD AND FITTINGS

**SIMMONS**

# Vari-Hite®

**MOTORIZED BED IS  
DEPENDABLY POWERED  
WITH A**

## Franklin Motor



SIMMONS' famous name reflects the fine quality apparent in their product.

Franklin Motors assure dependable powering of Simmons' Vari-Hite motorized hospital beds.

### THIS SAME MOTOR . . .

built for trouble-free service . . . is an ideal power unit for garage doors, gates, small lifts, valves, and for automated industrial machines or appliances. Where instantly reversible motorized action is needed, this Franklin Motor will provide the economical, dependable answer for the design or improvement of a more marketable product.



THE Franklin UNI-SEAL MOTOR

Another Franklin design especially applicable to pumps. Mounts vertically or horizontally. More and more, manufacturers are using dependable application-engineered Franklin Motors.



## Franklin Electric Co., Inc.

345 EAST SPRING STREET . . . BLUFFTON, INDIANA



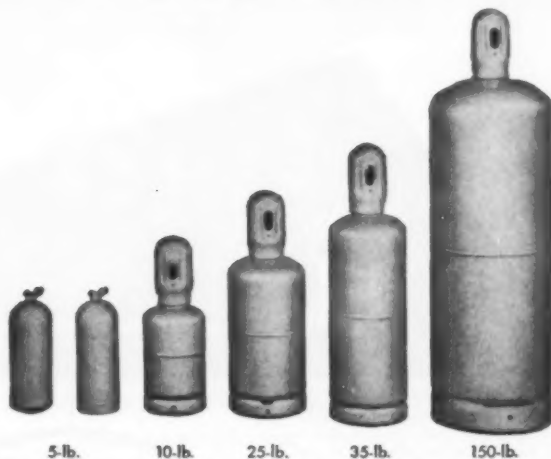
HOME OF DEPENDABLE ELECTRIC MOTORS

Look for Franklin Motors as a reliable guide to quality in . . .

- LEADING WATER SYSTEMS
- FINEST SUBMERSIBLE PUMPS
- LATEST TYPE CELLAR DRAINERS
- NEWEST FARM APPLIANCES
- HEATING & AIR CONDITIONING

**DON'T  
SETTLE  
FOR LESS**

**use**  
*Prest-O-Lite*  
Trade-Mark  
**CYLINDERS FOR  
REFRIGERANTS**



- ✓ Rugged, sturdy construction
- ✓ Uniform sidewall thickness
- ✓ Lightweight—easy to handle
- ✓ Finest workmanship
- ✓ Best appearance
- ✓ Tested far beyond all codes
- ✓ Extra years of trouble-free life
- ✓ They're economical!

You are sure that your refrigerant gas containers will give you many years of dependable service—and save you extra dollars—when you own PREST-O-LITE cold-drawn cylinders. They're built by the company which has been the largest manufacturer and user of compressed gas cylinders for almost half a century. In each step of design and fabrication the ultimate in gas containers is achieved—and this skill and experience is passed on to you with every PREST-O-LITE cylinder you get. It's no wonder that refrigerant cylinder buyers who have compared feature for feature have found out they are getting the greatest value with top-quality PREST-O-LITE cylinders.

Available in sizes ranging from 5-lb. to 150-lb. capacities—with valve, and cap on all but 5-lb. styles. A few of the popular squat-type cylinders are shown above. You'll like their good-looking appearance, with glossy metallic bronze finish. WRITE TODAY for full information and prices—select the PREST-O-LITE cylinder that fits *your* needs exactly.


**MADE BY**

*Linde*

"Prest-O-Lite" is a registered trade-mark of Union Carbide and Carbon Corporation.

**LINDE AIR PRODUCTS COMPANY**

A DIVISION OF UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street  New York 17, N. Y.

Offices in Other Principal Cities

In Canada: LINDE AIR PRODUCTS COMPANY

Division of Union Carbide Canada Limited, Toronto



# the best performers on earth

**MUELLER BRASS CO. *Streamline***  
REFRIGERATION AND AIR CONDITIONING PRODUCTS

Step right this way, refrigeration men, see the spectacular parade of the greatest performers on earth now at your wholesaler's.

A real seal is what you get with Mueller Brass Co. Wrot Fittings. A soldered joint with these fittings gives you a leak-proof system that's as much at home with refrigerants as the seal is in the frigid Arctic.

**wrot fittings**



The zebra is kind of a combination animal, shaped like a horse and striped like a cat . . . another real slick combination is the Mueller Brass Co. Angle Type Cartridge Drier-Strainer!

**angle-drier  
strainers**



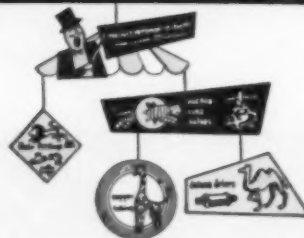
The mighty elephant is quick to sense trouble. The same is true of Mueller Brass Co. Liquid Indicators: quick as a glance they tell you of a refrigerant shortage or a restriction in the line.

**liquid  
indicators**



## SEE THIS DISPLAY AT YOUR WHOLESALER'S

This ad only shows part of the parade . . . see the giant, colorful "flying mobile" now on display at your wholesaler's, attracting attention to the "best performers on earth".



**MUELLER BRASS CO.** PORT HURON 10, MICHIGAN

Circle No. 31 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION



# HELP-



when you need it!

## You'll like AIRTEMP'S "helping hand" policy of doing business!

You'll find that Chrysler Airtemp people are helpful. Factory, field representative and distributor, all are ready to lend you a hand.

**Airtemp helps you**—as a *specialist*! Because Airtemp makes *only* air conditioning equipment, Airtemp gives you undivided attention on sales, application, inventory, credit, service, and other problems.

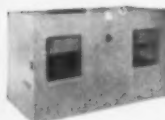
**Airtemp helps you**—with *advertising and merchandising*! National advertising plus promotion assistance on a local basis.

**Airtemp helps you**—as a *pioneer*! Beginning in "Packaged" air conditioning in 1937, Airtemp has a thorough understanding of dealer problems in this field.

**Airtemp helps you**—as the *leader*! With more Airtemp packaged units sold than any other make, Airtemp has a name and reputation to uphold. This is your assurance of a continuous conscientious dealer relationship!

**Airtemp helps you**—with a *complete line*! Ten models! Both water-cooled and waterless! From 2 to 15 H.P.

For complete information on how Airtemp can help YOU, write to: Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



Packaged Waterless (Air-Cooled) Air Conditioners—no water needed, no plumbing required. 2, 3, 5 and 7½ H.P.



Packaged Water-Cooled Air Conditioners in 6 models, from 2 to 15 H.P.

"the line  
that pays"



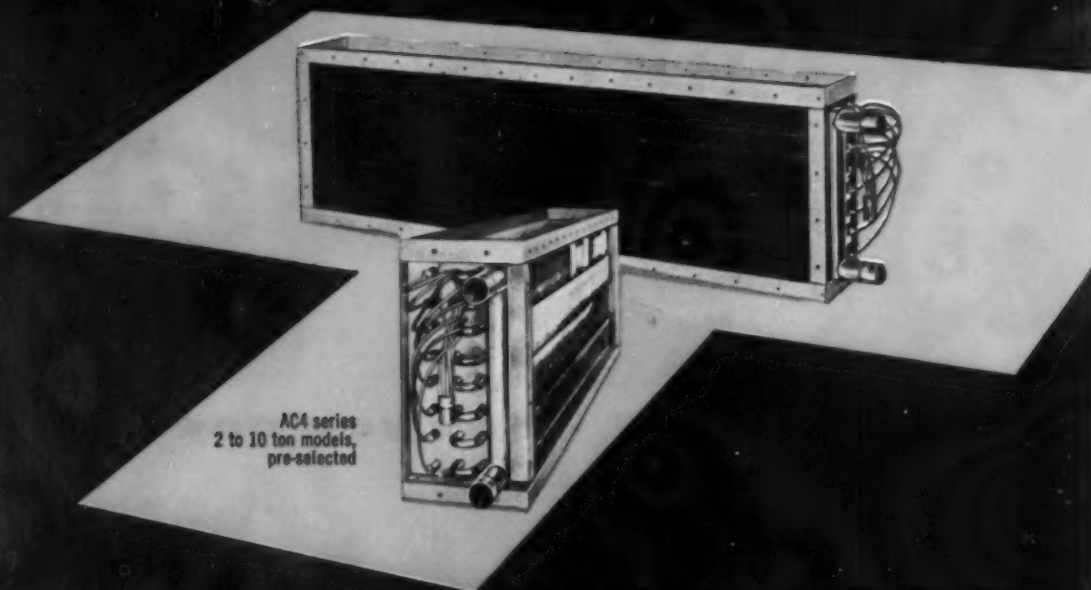
# Airtemp

DIVISION OF CHRYSLER

AIR CONDITIONING • HEATING FOR HOMES, BUSINESS AND INDUSTRY

Circle No. 32 on Reader Service Card

# OUTSTANDINGLY DIFFERENT!



AC4 series  
2 to 10 ton models,  
pre-selected

## EASY TO INSTALL, VERSATILE\* TENNEY AIR CONDITIONING COILS FOR GREATER REFRIGERATION EFFICIENCY

Tenney AC4 air conditioning coils are pre-selected  
for specific standard applications —  
skillfully engineered to successfully handle  
the widest range of air conditioning requirements.

Exclusive universal suction connections easily  
adapt Tenney coils to any direction of air flow.

Tenney manufactures a complete line of coils  
proven in service for every application...  
individually inspected and tested.

For complete information write for Bulletin 103-54 TODAY!

### TENNEY CONSTRUCTION FEATURES

- Aluminum Facetized\* fins for greatest heat transfer and dehumidification efficiency.
- Fins mechanically bonded to copper tubing.
- Extra heavy gauge galvanized steel end, top, and bottom plates (aluminum on request).
- Controlled copper welding — completely scale-free tubing.
- Pressure-type distributor supplied\* — fits any valve.

\* Patented



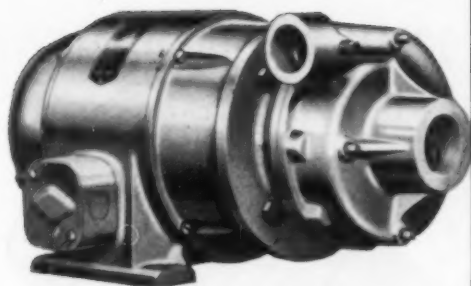
**Tenney**  
ENGINEERING, INC.

1090 SPRINGFIELD ROAD, DEPT. CR-8, UNION, N. J.

Plants: Union, N. J. and Baltimore, Md.

PIONEER MANUFACTURERS OF REFRIGERATION AND ENVIRONMENTAL EQUIPMENT

111



## HERE'S WHY THE ALL PURPOSE END SUCTION PUMP

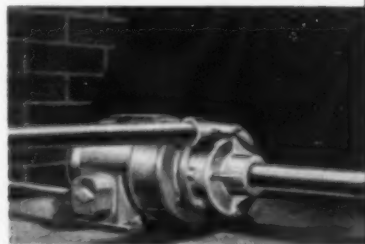
*is more popular every day*

AND WHY THE

## PEERLESS

*Fluidyne* TRADE MARK **LINE**

IS ONE OF AMERICA'S  
MOST POPULAR BRANDS



### PEERLESS PUMP DIVISION FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, Calif., and Indianapolis, Indiana  
Offices: New York; Atlanta; Chicago; St. Louis; Phoenix;  
Fresno; Los Angeles; Dallas, Plainview and Lubbock, Texas;  
Albuquerque, New Mexico.

Distributors in Principal Cities; Consult your Telephone Directory.

### ALL PURPOSE

Peerless Fluidyne pumps can be used for almost every general purpose pumping condition where *quality with economy* is a condition of pump application.

### COMPACT

Space costs money; Fluidyne pumps fit neatly into both piping and pumping layouts as well as into sub-assemblies.

### EASY TO MAINTAIN

No special tools are required to perform ordinary pump maintenance in the Peerless line.

### ATTENTION-FREE

Ample safety factors assure performance on continuous or intermittent duty, regardless of mounting angle.

### QUALITY FIRST

Every consideration has been given in design and construction to assure long service life even under abnormal conditions. Designed with economy in first cost, installation, maintenance and operation—all without compromise in quality.

### HUNDREDS OF SIZES

The Peerless Fluidyne line is one of the broadest offered by any manufacturer. Drives: electric, belt or flexible coupled; HP range: from 1/4 to 150 hp; Capacities: up to 5500 gpm; Heads: up to 260 ft.

### QUICK AVAILABILITY

Peerless stocks its Fluidyne line at branch offices geographically located at major population centers. This stocking plus Indianapolis, Indiana and Los Angeles plants makes possible *quick* shipments of anything from a pump to a truckload.

### NEW STYLING

Pleasing, trim and compact, their sturdy exterior design makes for neat installations.

### OUTDOORS-INDOORS

Indoors or out, every general utility pumping service can use Peerless Fluidyne Pumps. In all sizes, types and models the Fluidyne line is characterized by high performance ratings.



### MAIL COUPON TODAY

#### PEERLESS PUMP DIVISION

Food Machinery and Chemical Corporation  
301 West Avenue 26, Los Angeles 31, California

Please send without obligation new Bulletin 8-2300 describing Fluidyne line of fractional and integral hp pumps.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

A sparkling new  
"gem" for the **NIBCO**  
jewelbox!



# pure copper wrot adapters



Silver solder temperatures will not break down the grain structure of these adapters. And because they are pure copper, they provide quick, even transmission of heat.



Pure copper wrot adapters are formed from tube by a process which leaves them work hardened. These adapters are actually harder than the tube itself.



Roller threads provide an extra measure of strength because the metal structure is continuous, unlike that of machined threads.



Smooth interior surfaces cut flow resistance to a minimum. Positive steps in fittings save time, solder and tube.

In refrigeration systems, only pure copper can do the job *right* and NIBCO's 26 years of engineering experience back this new adapter. When a joint is properly assembled, the adapter becomes an integral part of the tube.

NIBCO alone supplies these pure copper wrot adapters. Sizes now available: 1/2" and 3/4" male and female.



Write today  
for NIBCO  
Catalog R-616 which  
illustrates the full line of  
wrot fittings for refrigeration  
and air conditioning systems.



NORTHERN INDIANA BRASS COMPANY

814 Plum Street, Elkhart, Indiana

Circle No. 35 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION

"I've seen the **AMPROBE**  
save us time and money  
on call after call..."

says George Heinz, Jr.,  
New York service manager for

**Servel**



"The Amprobe is a 'must' here at Servel! Every one of our mechanics, both on the bench and in the field, is equipped with an Amprobe snap-around volt-ammeter. Our records show hundreds of cases where the use of an Amprobe quickly indicated the trouble and avoided costly time-consuming guesswork.

"One of the things we like best about the low-cost Amprobe Jr. is its easily-visible, calibrated scale. But most important, it can check current without shutting down equipment—and on window units it gives us current readings at the receptacle with the simple addition of the Energizer attachment. I can enthusiastically recommend the Amprobe as the principal testing instrument for any up-to-date service shop." George Heinz, Jr., Servel Appliances, Inc., New York Service Dept. Manager.

There's an Amprobe for every job, every budget: from 10 amp and 250 volts capacity up to 1200 amp and 600 volts; from \$19.85 to \$67.50. See them at your jobbers today. PYRAMID INSTRUMENT CORP., LYNBROOK, N. Y.

## **AMPROBE®**

snap-around volt-ammeter  
... recommended as standard  
testing equipment by America's  
leading service managers.



### **Mail Coupon for Free Service Bulletins**

Pyramid Instrument Corp.,  
Dept. CRA-85, Lynbrook, N. Y.

Please send me the Amprobe service bulletins checked below:

- ☐ Know your UL wiring standards for room units
- ☐ Trouble-shooting electric motors
- ☐ 14 ways a volt-ammeter can boost your service profits

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

COMPANY \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_





# 1955 Mid-Season Report on our "Open Door Policy"

By The "LEHIGH TEAM"

## From management:

The Lehigh Team of "Management-Engineering-Production" continues to function smoothly and with its customary enthusiasm in all tasks and departments.

Facilities that were added during the past and current year are being taxed to capacity by firm orders and again we are projecting more production lines—widened engineering—increased mechanization in basic processing.

Our "Open Door Policy," which strips red tape from contact with customers — continues to ease, smooth and speed our relationship with all factors — to the end that we are "sitting in" con-

stantly in a wide variety of engineering and merchandising problems.

No major engineering or design changes have been made in the 1955 line. Lehigh BLU-COLD Condensing Units and Systems are satisfied, as of today, to rest on the excellent results they are producing in an infinite variety of commercial and industrial uses. This fine field record — which is now world wide in scope — stems not only from top drawer engineering and construction, but equally from super-critical pre-delivery testing and precise ASRE Code ratings. Your inquiry or personal visit is invited!

Export Dept.  
13 E. 40th St.  
New York 16, N. Y.



# Lehigh

## BLU-COLD

### CONDENSING UNITS AND SYSTEMS

Lehigh Manufacturing Co. Lancaster, Pa.

DIVISION OF LEHIGH FOUNDRIES, INC.

Circle No. 36 on Reader Service Card



## a **VIKING** tradition

Strength of body . . . strength of character . . . were the qualities by which the Vikings measured a man. To win recognition, the Vikings of old therefore proved themselves through extraordinary feats of strength and endurance. One of the traditional tests was the distance throwing of the heavy Viking spear . . . because on this ability life itself often depended.

Today, in the commercial refrigeration and air conditioning industry, the name **VIKING** has become synonymous with strength and durability in copper tubing. Through its quality and precision **VIKING** copper tubing has set a standard for the industry . . . and **VIKING** craftsmen, true to the tradition of their namesakes work constantly to produce the very finest copper tubing . . . a tubing worthy of the name **VIKING**!



# **VIKING**

*copper tube co.*

CLEVELAND 10, OHIO

**PRECISION DRAWN SEAMLESS COPPER AND ALUMINUM TUBING**

#### • EXTRA STRENGTH

The proper kind of strength and ductility is vital in tubing used for refrigeration and air conditioning purposes. Copper tube possesses these qualities to a far greater degree than other types of tubing. Its uniform temper assures trouble-free fabrication.

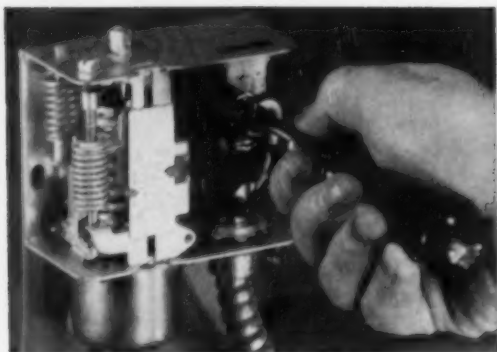
#### • EXTRA FLEXIBILITY

Viking Copper Tube is soft and pliable, yet exceedingly rugged. It saves time and labor because it can be coiled, formed, flared and expanded quickly without danger of fracturing or splitting.

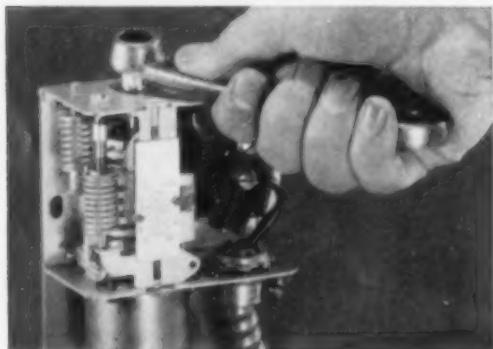
#### • CLEAN AND DRY

Viking Copper Tube is triple-sealed at the ends, stays dry and absolutely dirt-free. The seal is made to pass through any opening large enough for the tube itself. It's clean . . . it's bright . . . it's dry!

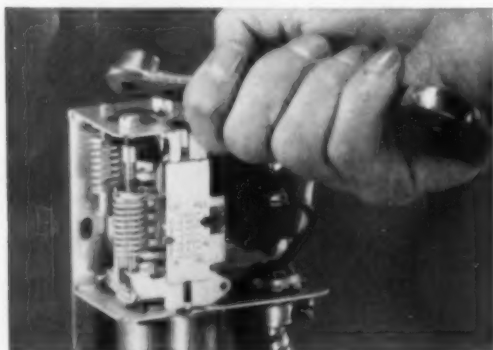
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1. Mount control (bracket furnished), connect capillary, remove control cover and make 2 electrical connections (terminals are completely accessible).



2. Turn range screw to raise or lower cut-in setting as required (differential does not change).



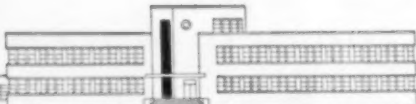
3. Turn differential screw to raise or lower cut-out setting independently of cut-in setting (this widens or narrows differential).

NOTE: Range and differential screws are slotted for screw driver . . . square for standard service wrench where space is tight.

# SAVE TIME, MONEY WITH PENN SINGLE-POLE REFRIGERATION CONTROL

◀ See how easy it is  
to install and set  
the Series 270

So easy to install . . . so easy to set! The Penn Series 270 Single-Pole Refrigeration Control features a simplicity of design that means a big saving of valuable "on the job" time. Mounting and connecting the control is easy, fast. Setting it is even faster. Penn's direct-reading, calibrated scale indicates cut-in and cut-out settings . . . eliminates time-consuming addition and subtraction. What's more, the Series 270 offers outstanding performance at an attractively low cost. Ask your wholesaler about the Penn Series 270 Refrigeration Control. You'll be glad you did. **Penn Controls, Inc., Goshen, Ind.**

**PENN**   
**AUTOMATIC CONTROLS**

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

**THE STORY OF** Tecumseh Products Co. and the men who guided its rise to prominence in the compressor manufacturing field is told in a feature article in the July issue of *Fortune* magazine. The story estimates that the company supplied about 48 per cent of the compressors used in household refrigerators, home freezers and room air conditioners in 1954. In its plant at Tecumseh, the article states, the company produces 20,000 compressors a day, with an additional 3,000 units being produced at Marion, Ohio. The new Danville, Ill., plant, opened recently, has a capacity of 10,000 units a day.

**AIR-CONDITIONED SIDEWALKS** are planned for a new \$2,500,000 shopping center in Fort Lauderdale, Fla., we understand. Cowlings set about 10 feet above the sidewalk and along the building walls will supply a draft of cool air which, it is expected, will fall upon the sidewalk and create a more comfortable atmosphere for shoppers. Cost of installation and maintenance doubtless will be high—but apparently the developers of the shopping center figure the “air conditioning” feature will be worth the expense.

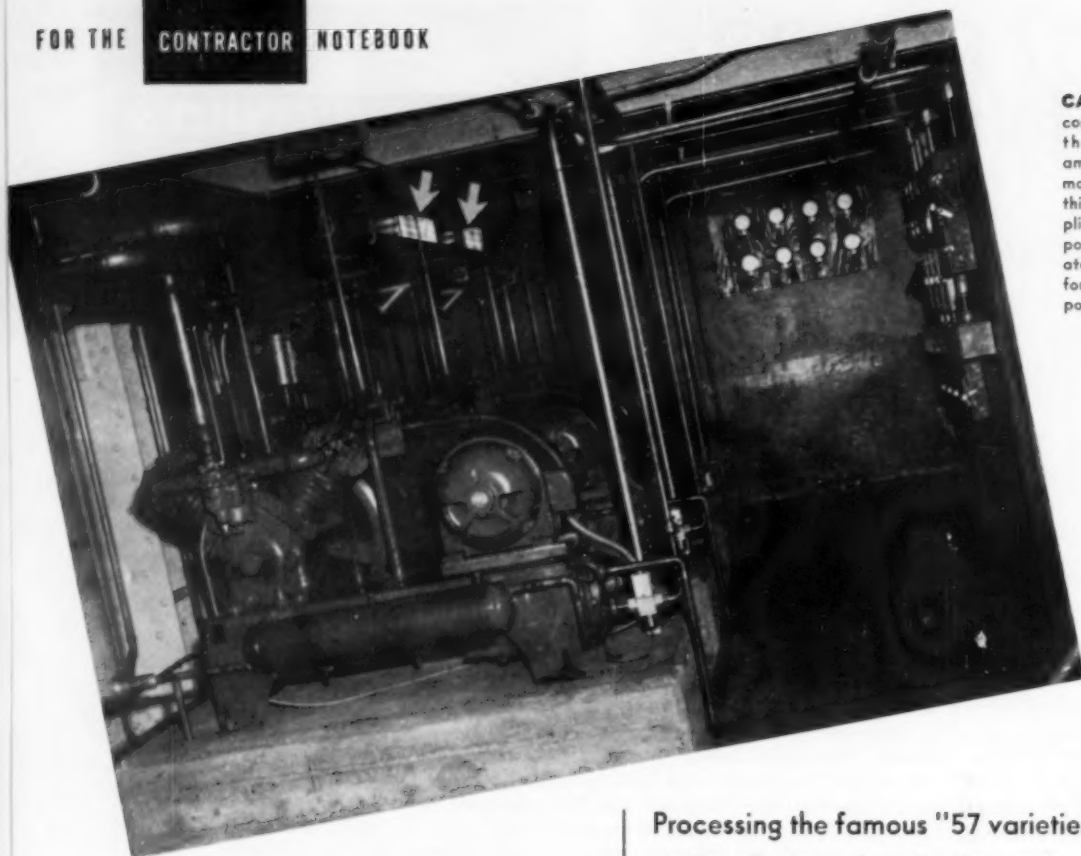
**INTERESTING SIDELIGHT** on the new 23-story office building in Denver's Mile High Center is the huge number and wide variety of valves—gates, globes, angles, and checks—used throughout this ultramodern structure. Some 2500 valves were furnished in all, ranging in size from tiny  $\frac{1}{8}$ " check valves to 16" gate valves. The perimetrical heating and air conditioning system alone is reported to have required the use of over 1000 125-pound and 250-pound gate valves for the heating units beneath the windows. A 16" gate valve controls the steam boiler head, while 14" gates handle the 800-hp air conditioning compressor and 10 and 12" gates control the chilled water and the condenser.

**ATOMIC ENERGY RESEARCH** sponsored by Kelvinator at the University of Michigan indicates that the storage life of perishable foods may be increased appreciably by use of gamma radiation and refrigeration, according to F. J. Worden, sales planning manager for refrigeration products. The research, part of the university's Memorial Phoenix Project studying peaceful uses of atomic energy, has been under way since 1952.

**RIDING HIGH** (and comfortably) will be travelers on the Santa Fe Railway's new fleet of “Hi-Level” passenger trains that will go into regular service sometime in 1956. Besides riding 8 feet above the rails instead of the usual 4 feet, travelers will have the luxury of a new, dry-operating air conditioning system developed by Trane engineers in cooperation with technicians from the Budd Co. and the Santa Fe. The air conditioning will go into 35 chair cars, six diners and six sky dome lounge cars. The diners and lounge cars will be served by two 10-ton systems, and twin systems of 8-ton capacity each will serve each chair car. Using no water for condensing, the air conditioning equipment fits into a compact compartment at each end of the car, over the wheels. Compressors automatically “unload” as cooling requirements drop, and the system automatically responds to outdoor weather changes.

**REFRIGERATION AND GLAMOR** may seem almost as far apart as the poles, but we learn that they get together in at least one application in the field of “beautification”. Gala of London, one of the leaders in the cosmetics industry, uses cooling equipment to provide block ice which serves to harden lipsticks contained in special trays. We don't have figures on the footage of lipstick consumed per woman per year in the western world, but we'll bet it's a big one. We've heard it said that the cosmetics industry is the second largest in the United States—and it is gratifying to learn that refrigeration plays a part in it, as it does in most other industrial fields.





**CAPACITY** of these compressors is more than double the amount that is normally required in this food storage application. (Arrows point to re-evaporators which serve four defrost units in poultry room.)

Processing the famous "57 varieties" of food-stuffs requires a lot of refrigeration know-how — so here's one word of caution that the H. J. Heinz Co. offers to all who deal in perishable commodities . . .

## DON'T SKIMP on Compressor Capacity

**W**HERE food is to arrive at storage rooms for refrigeration in sudden large lots, instead of in a steady flow, it is important to have chilling equipment with a capacity in considerable excess of average requirements. Also, it is prudent to have the equipment arranged in two approximately equal sections so that one alone can carry an average load in case of breakdown of the other.

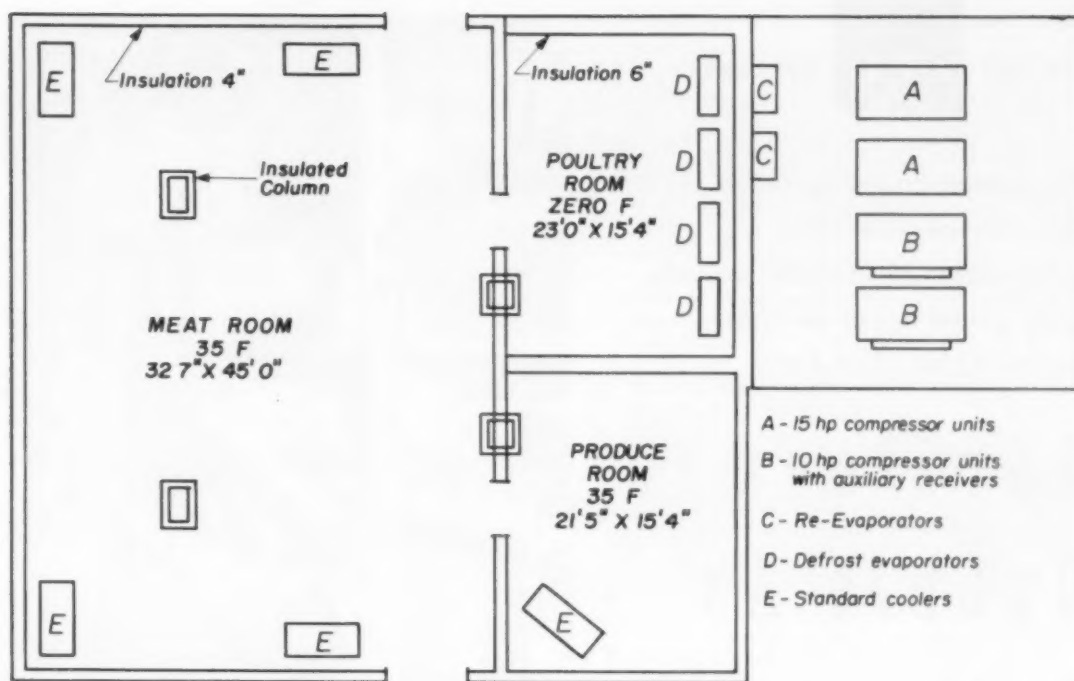
Both of those fundamental points of sound refrigeration design are well exemplified in the case of a Pittsburgh plant of the H. J. Heinz Co., famed for its "57 varieties."

At one time, raw food arriving for this plant was kept temporarily in rented storage facilities, as needed.

Originally, this had advantages as well as disadvantages, but as time went on the objectional elements tended to increase.

Always there was a certain amount of inconvenience in arranging for the storage facilities themselves, in having the food shipped first to one address, and then transferred to another. Also, such double handling increasingly wiped out economies that might otherwise have appeared. Finally, there were certain worries involved—that the "human element" would be guilty of expensive errors by failing to conform to the company's requirements.

The dangers were particularly critical at the weekends, and before holidays. Even when overcome, the



**LAYOUT OF REFRIGERATION** area shows two different temperature zones and neat arrangement of equipment to serve them. Note that auxiliary receivers are used on 10-hp units, and heavier insulation around zero room. Floor and ceiling are similarly insulated, and the defrost evaporators are suspended from an independent beam not in contact with the ceiling as a means of reducing heat leakage to a minimum.

hazards in such cases were undesirably expensive.

Suppose a shipment of dressed chickens, packed in ice, should be delayed in transit so that it didn't arrive until late on a Friday afternoon. Could a storage company be relied upon to handle the shipment promptly then? Would the truckers find the storage place locked up for the week-end?

Likewise, there was always the question: What quantity of frozen food should be ordered to the plant from the warehouse for processing within a fixed number of daily hours? And what to do with any un-processed surplus at the end of the day—return it to the warehouse, or hold employees on the job at overtime rates?

In the face of such problems, it didn't take the company very long to decide to install its own refrigeration facilities, and instructions were given to its own engineering department to design them. Then the contract for the equipment and its installation was awarded to the Olsen-Ley Co., a Pittsburgh firm with an enviable reputation for its own engineering and on-the-job practices.

After studying the original plans, Olsen-Ley suggested certain minor revisions, which were accepted, and then hastened the installation to a conclusion.

The storage facilities were located inside the plant but in an area separated from all of the exterior walls. Three rooms were constructed in a rectangular space. Two entrances were provided from the plant into the

main storage room, from which doors open into the other two rooms.

The main room, approximately 32'7" x 45' 0", was provided for the storage of meat at a temperature of 35 F. Another room, about 21'5" x 15'4", was designated for cream, eggs, vegetables, and other produce, to be kept also at 35 F. The third room, for freezing and storing poultry, is just slightly larger than the produce room, and was specified for zero F.

Cork insulation 6" thick was applied to the floor, ceiling, and two exterior sides of the zero room. The same material 4" thick was applied to the exterior sides, ceilings, and floors of the other two rooms, and also to the inside partitions.

Concrete with a maximum thickness of 6" was poured on top of the floor insulation, with a surface slope of 1/4" to 12" leading to drains.

Special care was taken to protect the insulation from damage and to prevent metallic or other weak-spots of conductivity through it. Bumpers made of 2" x 10" wood planks were installed at the base of all walls and partitions, and around the concrete columns which at several points extend from floor to ceiling. In addition, the four defrosting evaporators of the zero room are hung from an independent I-beam which is supported by four 4" steel pipe columns, so that no bolts extend from this room into the floor above to conduct

*Continued on page 63*

This commercial refrigeration firm maintains a steady sales volume of \$350,000 annually, using a bank-approved meter payment plan which has . . .

## Servicemen Double As Collectors



**A PLENTIFUL RESERVE** supply of collection meters is advisable if a company operates such a system. Numbers actually in use may fluctuate, so the total should be sufficient to handle peak periods. Here, a serviceman removes a meter from shelf storage.

**Q**UICK, reliable financing when it is needed in the sale of commercial refrigeration equipment, and an absolute minimum amount of repossessions and other unpleasantness, are among the advantages of a novel payment-collection system devised at the Ace O'Hara Co., Phoenix, Ariz.

Ace O'Hara Co. sells a volume of more than \$350,000 a year in commercial refrigeration equipment throughout Arizona, and covers probably the largest territory in the Southwestern industry. With four servicemen, the company offers a year's free service on ice makers, display cases, walk-in freezers, and similar equipment, and has been known to dispatch a serviceman a distance of 200 miles or more for repairs, "winterizing", and the like.

The reason the big Arizona dealership can afford to maintain

such a widespread service territory, and to offer a year's free service is simply the excellent sales volume maintained at the same time, according to Don Huntress, formerly sales manager and now owner of the firm. Selling so large a volume is a composite of aggressive, cooperative help from Arizona banks, in return for the Ace O'Hara company's work in collecting meter-bank payments.

Ace O'Hara resurrected the meter payment system several years back, when the Phoenix area went on a population-expansion boom which has continued steadily ever since. To make it easy for the supermarket owner, druggist, delicatessen owner, etc., to make his refrigeration "pay as you go", Huntress offered standard meters, and encouraged his prospects to pay for the equipment on this simple basis. He met with much suc-

cess, from a sales standpoint, but financing was another—and more difficult—problem.

Eager to enlist the aid of Phoenix banks, the Ace O'Hara firm laid an unusual proposition before them. If the banks involved would purchase the contract on each piece of refrigeration equipment immediately after the sale, Ace O'Hara would take care of the coin-meter collection, regularly forwarding the collected amount to the bank for crediting to the proper customer. Begun on an experimental basis, this plan has worked out so well that currently the Arizona refrigeration firm turns every contract, on every new piece of equipment sold, over to the bank, and then, on bi-monthly drafts, keeps up the payments. These are collected by the firm's servicemen, who thus can be depended upon to call upon every recent Ace

O'Hara installation at least once a month, and in this way run a perpetual check on each piece of equipment as an advance guarantee against its breakdown.

"Collecting from the meters costs us around \$100 a month," Huntress said, "in addition to the investment we have had to make in a quarter-counting machine in the office, in bookkeeping equipment, etc. Still, we have found the plan very advantageous. We have found that in making the collections, we stay in closer contact with the customer, maintain a much closer control over the contract, and when we see a delinquent account developing we are able to do something about it right away. A bank foreclosure or repossession is always a costly, ill-



**MILEAGE** of collectors is a factor to consider. This office worker for Ace O'Hara Co., is shown computing distances from a convenient wall map.

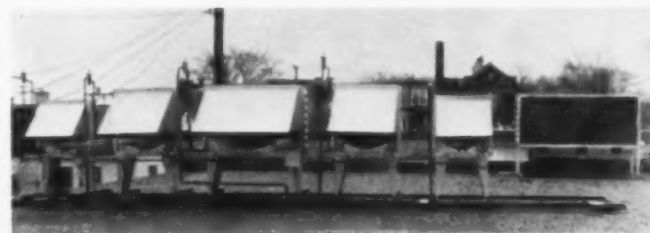
will-provoking nuisance, and one which does neither the seller nor the buyer any good.

"Consequently, we are glad to make hundreds of coin collection calls per month, which keep us abreast of whatever situation may develop. It is only on rare occasions that we do not see everyone of our customers every month, and in the event that business troubles are coming along, we are on the

*Continued on page 64*



**COMPLETELY HIDDEN** behind the roof flanges of this modern supermarket are seven air cooled condensers which are coupled with the store's refrigeration and air conditioning equipment.



**THIS LINEUP** of five air-cooled condensers at the left cool the refrigerant for the market's walk-in boxes and display cases. In the background at the extreme right is one of the two air-cooled condensers which handle the store's 10-ton air conditioning system.

## Grocery Chain Cuts Operating Costs

**U**PKEEP of cooling towers and evaporative condensers required so many hours of work annually for maintenance crews of the Paxton Wholesale Grocery Co., Champaign, Ill., that Paxton now is equipping refrigeration at all of its new supermarkets with air-cooled condensers.

Elmer Colby, construction engineer for the Paxton chain of "Grab-It-Here" stores, reports that savings in water bills and maintenance work through use of Kramer Trenton "Unicons" have spurred the company to insist on nothing but air-cooled condensers. These units have been utilized by the Paxton Co. for two years.

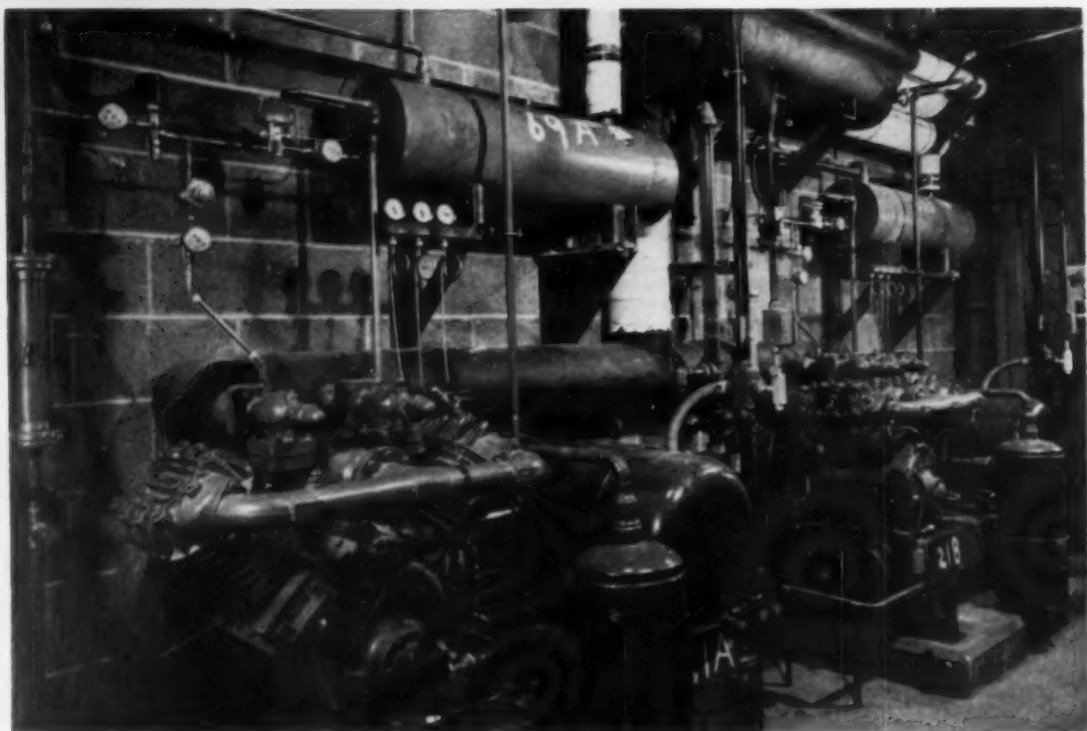
At Paxton's market in Champaign, all condensing on the air conditioning system, open dairy cases, open vegetable cases, meat, fish and poultry cases and walk-in coolers is done by air-cooled condensers of varying sizes and types. In all, the complete market installation requires the use of seven such units, two of which are used in conjunction with two 5-ton Brunner air conditioning systems. The other five units, which operate the year around, are equipped with winter controls.

All the condensers are mounted on the store roof and are equipped with standard motor hoods and floor stands.

One 3-ton air-cooled condenser operates with a 2-hp Brunner compressor on 22' of double-deck dairy cases; one 2-ton unit operates with a 1½-hp Brunner compressor connected to a 10' open vegetable case; another 2-ton condenser operates with a 1½-hp Brunner compressor connected to a 20' double duty meat case; and 1-ton unit operates with a ¾-hp Brunner compressor connected to a 10' fish and poultry case.

According to Colby, head pressures on the installation never went below 100 pounds during the past winter, although outside temperatures were as low as 15 F.





● This carefully engineered system solved a knotty industrial problem

## Two-Stage Refrigeration System

*compensates for heat exchanger loss*

**T**HERE seems to be no bounds to America's inventive genius. Every day industry finds new ways in which to utilize refrigeration as a research or production tool. Typical of such applications is the two-stage Freon-22 system used by Dow Chemical Co.'s Midland, Mich., plant as an aid in distilling impurities out of hydrocarbon gas.

The chemical firm needed a purer ethylene gas for processing purposes in a particular pilot plant. Regular ethylene was not pure enough for this special use.

To help solve the problem of how to satisfactorily separate hydrocarbon gases by distillation in a distillation tower, Dow's refrigeration department, under the direction of G. W. Woolever, was called into consultation. The result was the design and installation of a 60-ton F-22 system employing two stages of refrigeration in parallel.

Two 30-ton water-cooled compressors were employed, having a total capacity of 50,000 Btu/hr. This capacity was provided to allow for varying load con-

ditions, although either one of the two compressors will handle the installation on a normal basis. A shell-and-tube heat exchanger is employed between the F-22 and the condensing hydrocarbon gas.

Normally this distillation process is accomplished at -10 F, but the two-stage system actually will provide temperatures as low as -35 F. This added capacity not only provides a safety margin but also takes care of any heat loss occurring across the heat exchanger.

A by-pass arrangement installed to equalize pressure on the heat exchanger requires the use of double solenoids and double expansion valves on each unit.

An unusual number of line valves were employed on this installation to make possible the isolation of various sections of the system or of any particular line. This was done so that if service is required it is not necessary to pump down the entire system. In case of such pump-down, the charge of refrigerant gas would be lost, as the receiver is not large enough to accommodate it.





**THE SIZE, SHAPE AND QUALITY...**

*to fit your job best!*

#### CHASE COPPER SOLDER-JOINT FITTINGS

Efficiency comes naturally to refrigeration and air conditioning systems made with Chase wrought copper solder-joint fittings! Flow of coolant is bound to be smooth and rapid. Flawless Chase fittings have no shoulders or rough interiors to cause turbulence or increase friction.

Couple Chase wrought fittings with Chase copper tube for *really outstanding* performance. They fit each other perfectly. Expand and contract as one rugged unit.

Use Chase wrought copper solder-joint fittings, clean-capped Chase Type L tube, and Chase extra-soft copper refrigeration tube. Your Chase wholesaler has a complete selection right on hand. Send him an order today!

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## CLEVER *Special Purpose* COOLING

### AIDS CANDY MAKING

Both air conditioning and refrigeration, combined in a variety of tailor-made systems, contribute to production in a modern candy plant.

**O**RDINARILY, air conditioning is for people, and refrigeration is for products. But there are some instances in which both types of equipment are operated simultaneously in a set-up designed so that each of them will contribute to the efficiency of the other.

Seldom are the primary purposes of refrigeration and air conditioning so extensively and so cleverly interwoven in an industrial application as in the case of the Indianapolis factory operated by McAfee Candies of Indiana, Inc.

Built about 10 years ago, this factory has two floors above ground level, and a full basement, so that its total floor area is about 65,000 sq. ft.

The company makes a dozen or more varieties of candy. Some of these have soft centers but are enrobed with chocolate, and some have "chewy" centers that are covered with chocolate. The centers of the latter group are produced by a hard-candy process, but in relation to refrigeration problems they are classified as in the soft-candy group. Uncoated hard candies



**REFRIGERATION** enters into processing of candy as soon as cooking is complete. Here, candy-makers are shown pouring hot candy onto water-cooled steel tables. Canopy (at left) is part of factory's air exhaust system. Water in tables is at 54 F, cooling the product quickly.



**CANDY** entering this packing area on conveyors is chilled and kept free from stickiness by a process which begins with air conditioning the whole room to 55 F. The room air is blown into pipes, paralleling the conveyors, and is forced onto the candy through under-side slots.

comprise the third group of McAfee products which, like the others, requires elaborate provisions for process refrigeration.

Any kind of candy involves basic refrigeration problems. All are subject to hazards of melting, surface stickiness from heat or humidity, and spoilage in several other forms. Chocolate is also highly sensitive to excessive cold.

The refrigeration problems of candy are by no means confined to the finished product. Applications of refrigeration begin even in the storage of raw materials, and continue throughout the manufacturing process.

At the same time, in a candy factory where necessarily there are large quantities of heat utilized for processing the products, there is a need not only for product refrigeration but also for air conditioning for the employees as well.

Moreover, some of the primary requirements for refrigeration are supplied by equipment that cools entire rooms where it serves incidentally as air conditioning for the employees also.

Under such circumstances, the various functions at McAfee are performed by a wide variety of air conditioning and refrigeration equipment operating in several independent systems, yet with each having a direct or indirect effect on the others.

The systems were designed by Alvin Wonders, chief engineer of the company, in cooperation with Frost-Air Co., a local dealer.

A foundational element in the set-up is the fact that this company has an exceptionally fine and plentiful supply of cold water from two deep wells. It has the pumps for them, and storage tanks, in separate rooms in the basement.

One well, 167' deep, yields 525 gpm at 80-lbs. pressure, using a 20-hp pump and 12" casing. The other,

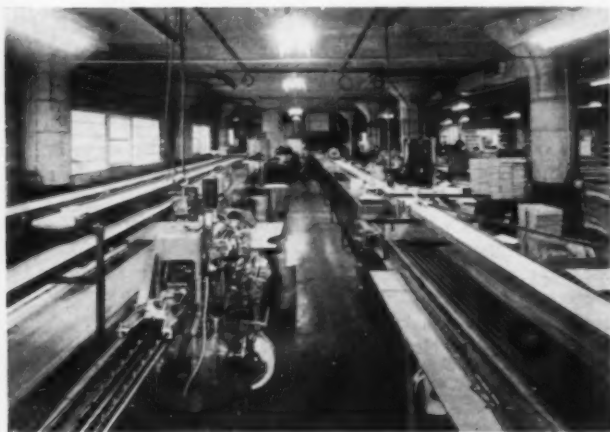
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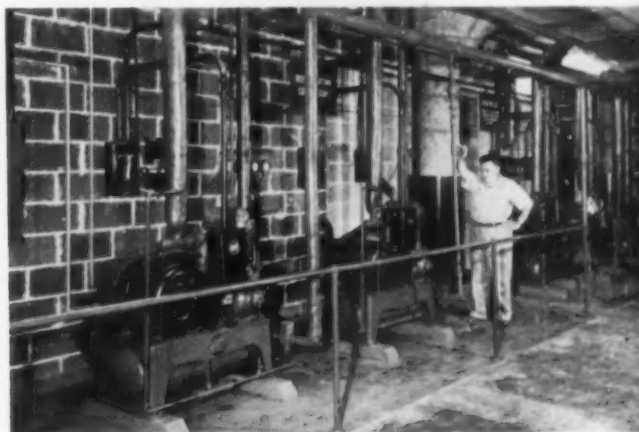
**COIL-BLOWER** unit, one of seven used in McAfee plant, is ceiling-suspended (at right-rear) in room where centers of peppermint patties are made. Ceiling ductwork aids the air distribution. Wheeled machine (at rear-center) also is used in making candy, and is water-cooled at 54 F.



**COOKING ROOM** gets air conditioning through overhead ducts (at right). Candy in cooker (left) must be closely controlled by employee to keep it from being sucked into vacuum pipe at top of the unit, and room cooling helps greatly to keep him alert to his "ticklish" job.



**TUNNELS** with starting temperatures of 32 F are used to solidify chocolate-coated candy. The products move through these long rectangular ducts (both sides of center aisle—rear) on belt conveyors. The entire room is cooled to 60 F by separate units of air conditioning.



**COMPRESSORS** are located in basement, including this main battery of units. Pumps for two water wells, which are a keystone in this company's refrigeration-air conditioning systems, are in rooms behind the block wall. Note the guard-rail to protect personnel and equipment.

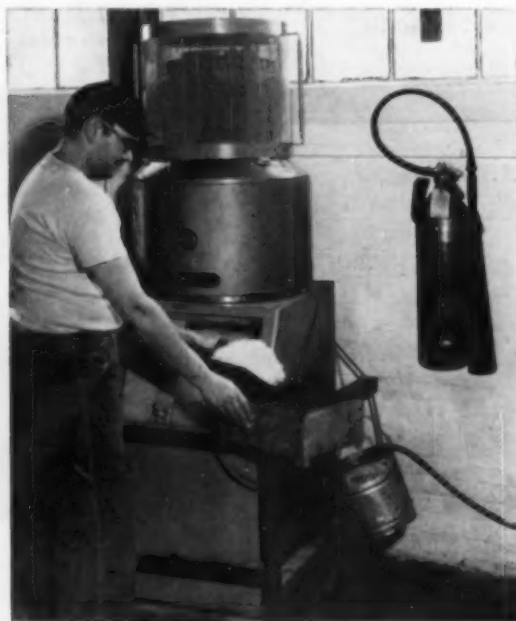
**GLUE POTS** like the one over which this television cabinet panel is being slid must be kept cool so that the glue will not "set up" or harden. To accomplish this, the jacketed container surrounding the pot is kept filled with flaked ice.

## Ice Makers

BEAT GLUE "SET-UP" PROBLEM IN

## Woodworking Plant

**E**VER try to clean out a glue pot in which the glue has hardened? The job is roughly comparable to that of tearing up a concrete block! Yet this was a problem which the Red Lion Cabinet Co. of Red Lion, Pa., a leading supplier of cabinets to the major radio and television manufacturers, was forced to face with discouraging regularity.



It seems that any glue which uses a catalytic agent to obtain a fast "set"—and this type is used by practically all manufacturers in the woodworking field—must be cooled in some way to assure a "pot life" long enough for fairly continuous production. If the room temperature goes over 40 to 50 F, the glue will begin to "set up" or harden in the pot.

Two different methods commonly are used to counteract this problem. One is to run cold water lines into jacketed containers for glue pots; the other is to keep the glue pots cool by placing them in packed ice. Red Lion Cabinet Co. uses both methods, but it was the ice treatment which was causing the firm trouble.

The company had been in the practice of buying its ice from an outside source and storing it in a refrigerator. Since the plant works around the clock by operating three shifts, however, the management soon found that they were unable to maintain an adequate supply of ice, particularly during the midnight shift.

Consequently, a familiar sight around the plant was that of an operator rushing frantically with his glue pot for a pan of cold water, in a frequently vain attempt to arrest the setting-up action. When this emergency measure failed, he then was faced with the formidable task of cleaning up the pot. This, of course,

*Continued on page 79*

**TWO ICE MAKERS** like this one from which the workman is removing a scoop of ice provide an ample and convenient supply of this vital cooling medium for the glue pots in the woodworking shop of the Red Lion Cabinet Co.





Bends as easy as  
PIE\*

You need no tools when you bend dead-soft DRYSEAL . . . just hands . . . while the special temper and ductility of DRYSEAL make it easy to flare for compression fittings without danger of splitting. Another thing you'll like about DRYSEAL is the double-crimp seal at each end of the tube. This is the final step in manufacturing, immediately following a special cleaning and dehydrating operation. This keeps dirt and moisture from entering the tube. The seal is made in such a way as not to change the diameter of the tube so that it can pass through any opening large enough for the tube itself. Tube sizes— $\frac{1}{8}$ " to  $\frac{3}{4}$ " O.D. The DRYSEAL carton, attractively designed for easy identification, contains one 50-foot coil . . . is easier to handle, light weight, economical and sturdily made to assure protection of the tube in stock and in transit.

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\* **REVERE**

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COPPER  
REFRIGERATION  
TUBE



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Planned Peak Performance  
that Service Engineers have  
relied on for over...*



*21 years*

*The*  
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**C CHARGE**

*for Suction Temperatures above Zero*

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*for Suction Temperatures below Zero*

**X CHARGE**

*for Extremely Low Temperatures*

• • • and the reasons for Sporlan's great reliability are *two-fold*.

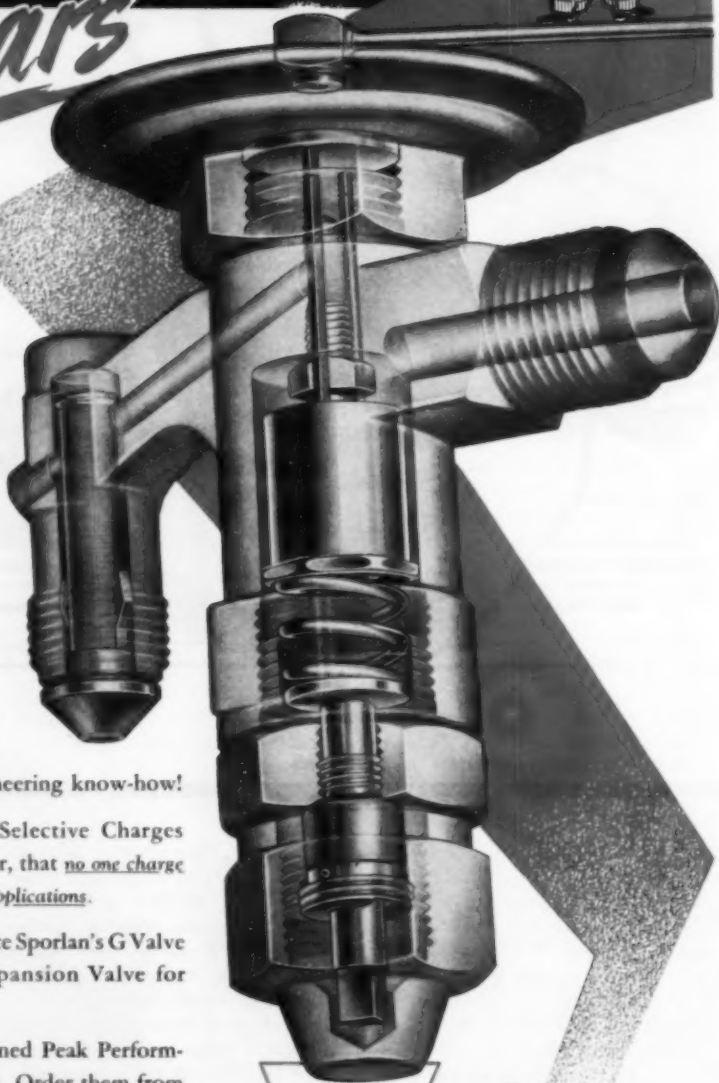
*There has been just one Sporlan design, never changed, but constantly improved by 21 years of engineering know-how!*

*And Sporlan has always offered Selective Charges which keep on proving, year after year, that no one charge can properly operate a valve on all applications.*

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Peak Performance throughout!*



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AUGUST, 1955 • COMMERCIAL REFRIGERATION



## It Happened in Old Mexico

... but it had its start in the pages of *Commercial Refrigeration & Air Conditioning* magazine. Here's how the description of a Toledo, Ohio, fishery sparked the construction of a similar plant down "south of the border".

**M**EXICO'S most modern fishery plant, strange as it may seem, had its inception in an article which was published in the October 1951 issue of *Commercial Refrigeration & Air Conditioning* magazine. Here's how it all came about.

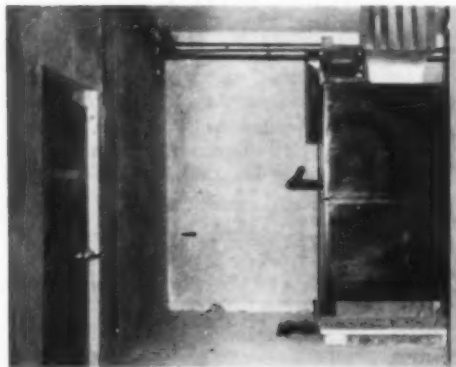
The article in question, entitled "Prove a Point and Win a Customer" described an installation of commercial refrigeration equipment in the Hosko Fishery in Toledo, Ohio. One of the most interested readers of this article, it developed, was Hector Medina, general manager of Refrigeracion e Ingenieria Industrial, S.A., a refrigeration contracting firm in Mexico City.

After reading the Hosko article, Medina began

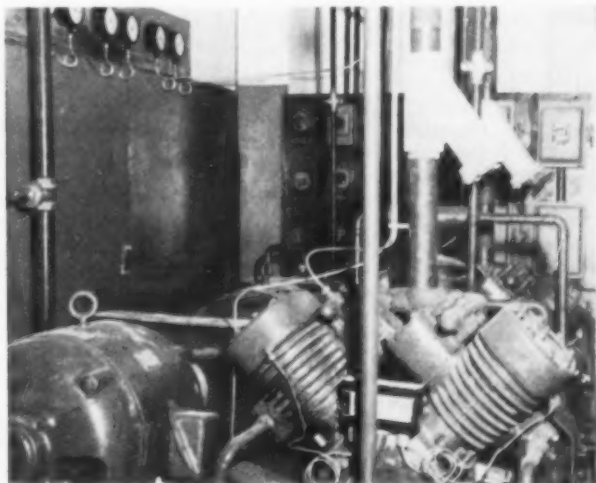
turning over in his mind the possibility of constructing a completely modern and up-to-date fishery plant in his own country. After devoting considerably more research to this project he wrote and published a 44-page booklet dealing with the problems encountered in Mexico in the processing, distribution, and retailing of fish. This booklet emphasized the point that, properly handled, fish could provide a wholesome, plentiful, and inexpensive source of nourishment for the people of Mexico.

This booklet came to the attention of the Mexican authorities, and they were so impressed with Medina's detailed analysis of the situation that they commis-

*Continued on page 107*



**MAXIMUM FLEXIBILITY** of refrigerating equipment in the Mexican Fishery Plant was provided by interconnecting the one 10-hp and two 15-hp compressors located in the machinery room (right). Water defrost is used on coils, such as the product cooler shown in the 32 F room (above).



# THE COMMERCIAL REFRIGERATION and AIR CONDITIONING APPLICATIONS MANUAL

by Hugo C. Smith

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

## "Duplex" Refrigeration System Assures Hospital Maximum Possible Reliability at Moderate Cost

TWO years ago we had occasion to equip several coolers in a hospital laboratory to be used mainly for polio research. We were asked to make these coolers as nearly perfect as possible. The owner wanted and was willing to pay for the most reliable and fool-proof method of refrigerating the coolers, to assure positive refrigeration at all times, barring power failures and "acts of God."

Purpose of this particular project was to refrigerate laboratory test material over a 5-year period. Loss of temperature for a single night would make it mandatory for the tests to be started all over again from scratch.

The system we designed, which is still in use today giving excellent results, is not extremely expensive. It embodies few gadgets, no trick controls, and is made up entirely of conventional components. Any maintenance or service man with the barest basic refrigeration knowledge can easily perform all service operations necessary.

### "Duplex" System Used

This system will maintain temperatures within  $\frac{1}{2}$  of 1 degree. It is basically two independent refrigeration systems installed on the same cooler. Each of the two systems is sized to individually handle the heat leak and usage load of the cooler. If a heavy product load is placed in the refrigerator, both condensing units will automatically start and run until the load is reduced.

Each system is controlled by a simple pressure control. No shut-off

valves are used in the entire system, except the service valves on the condensing unit. No solenoid valves are used, no thermostats, and no back pressure regulators or pressure limiting expansion valves.

Only the simplest, most trouble-free components are utilized. Each system contains the following common components:

- (1) Hermetic condensing units.
- (2) Continuous copper tubing to the evaporator on both liquid and suction line, if possible.
- (3) Liquid line drier on the expansion valve, using an adsorbent type desiccant combined with good filtering characteristics.
- (4) A simple liquid charged thermostatic expansion valve at the evaporator.
- (5) Forced air evaporator of conventional multiple circuit design, preferably one that does not use a pressure type distributor and therefore does not require an external equalizer connection. (We feel that pressure type distribution, while it may afford certain savings to the coil manufacturer, is not conducive to overall system efficiency.)
- (6) A suction line drier-filter utilizing a molded adsorbent desiccant installed at the compressor, sized to 2-lb or less suction line pressure drop.

When the systems are installed, the pressure controls are set at identical settings. These settings are somewhat different than for a single unit. For instance, on a single unit system using F-12 a setting of 36 lbs cut-in and 18 lbs cut-out normally will produce a cooler temperature of

36 F plus or minus 1 degree. Using the "duplex system", 34 F can easily be maintained on the settings of 34 lbs cut-in and 20 lbs cut-out.

Some readers may have questioned the  $\frac{1}{2}$  of 1 degree cooler temperature change mentioned earlier. This is obtained by a natural inherent characteristic of this type of system.

In a single unit system, between start and stop of the compressor, the pressure must travel from 18 lbs to 36 lbs before the compressor will start. It is necessary that the pressure be brought up to 36 lbs at least to insure adequate defrosting on a forced air evaporator.

### Compressors Alternate

In a duplex system, however, the situation is somewhat different. Both pressure controls tend to closely parallel one another. Thus, when compressor A is at 34 lbs cut-in point, compressor B is at 33½ lbs, or just below the cut-in point. Compressor A starts, which in turn cools the gas in the compressor B suction line to about 32½ lbs. Compressor A continues to run and pulls down to its cut-out point at 20 lbs, while the suction gage reading on compressor B still holds at 32½ lbs.

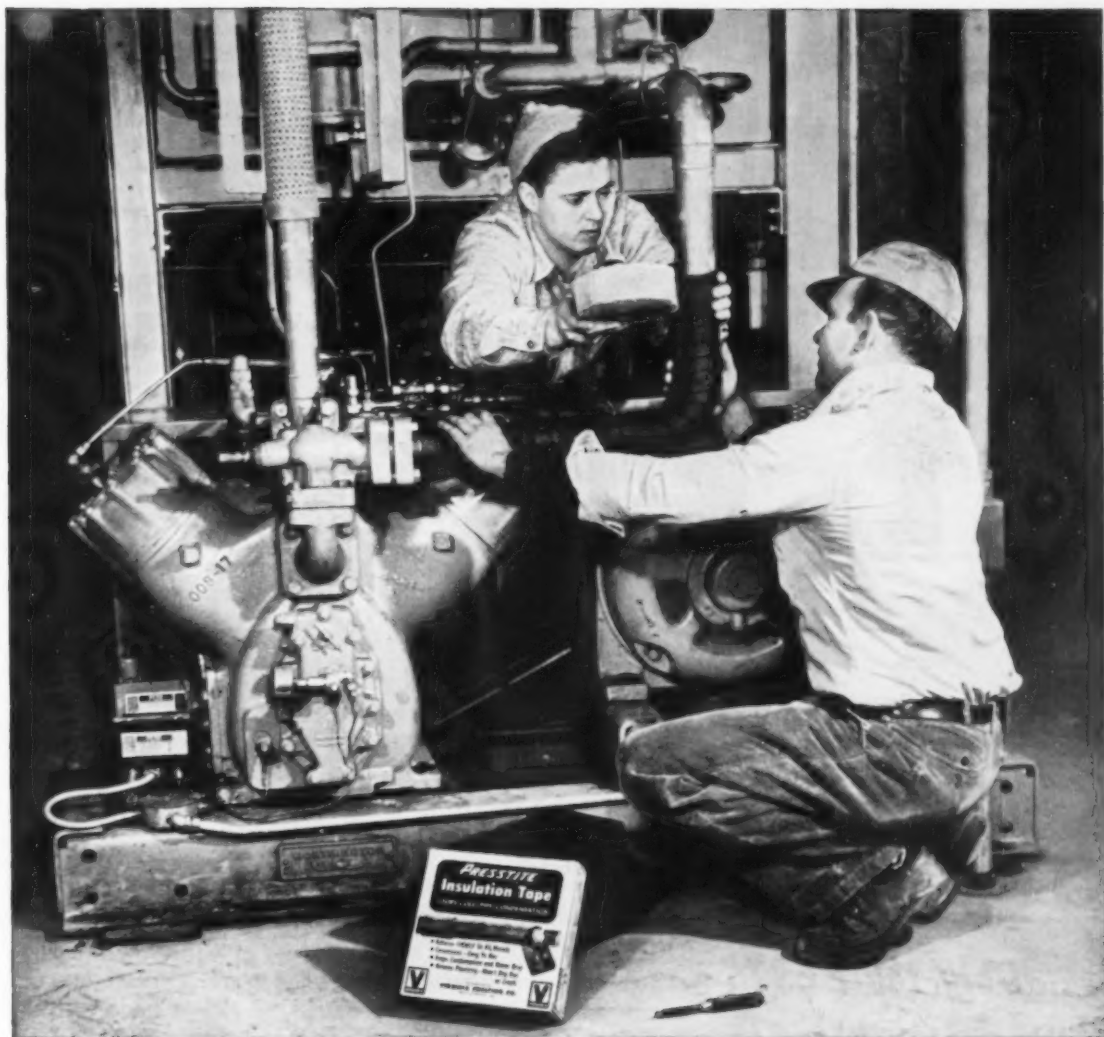
Automatically, then, compressor B will take the next cooling cycle and it will do so upon an extremely small temperature rise in the cooler, inasmuch as the pressure only has to rise from 32½ lbs to 34 lbs for compressor B to start and run.

Thus, without the use of a million gadgets and with the application of a little plain every-day common sense engineering, it is possible to put together a refrigeration system of nearly perfect performance characteristics and as close to 100% reliability as it is possible to approach. Curiously enough, the cost of this type of job per Btu capacity is often less than that of a single unit system. At worst, the additional cost never runs more than 10%.

Another beneficial result of the duplex system is that it provides the application engineer with a whole new set of capacities which can be applied to any job. Ever hear of a 4-hp compressor? Two 2-hp units

### CORRECTION

The Applications Manual section in our July issue was incorrectly published under the by-line of Hugo C. Smith. Actually, last month's Manual was prepared by Arthur H. Farr, while Smith authored the current month's Manual selection.



## Presstite Tape stops the drip, once and for all

Cold pipe condensation can make a mess of the finest installation—can ruin walls, woodwork and merchandise—unless you take the precaution to use Presstite Insulation Tape. This solves the dripping problem for good.

Presstite is simplicity itself to use. Just wrap the tape spirally on the surface you want insulated—suction lines, cold water lines, valves or fittings. Presstite Tape can be used on hot pipes up to 165°F, and is ideal for those lines used

alternately for cooling and heating. No matter how thin a coating you put on, the joints are self-sealing, and you can build up the wrappings to any thickness you want. No cements or other coatings are ever needed.

Presstite Tape contains 40% virgin cork and will adhere to any metallic surface. It never dries out, hardens or becomes brittle. Each convenient package contains a 30 ft. roll of tape 2 in. wide and 1/2 in. thick.

Get Presstite Insulation Tape from your favorite wholesaler, or write Refrigeration Division, VIRGINIA SMELTING Co., Dept. 64, West Norfolk, Va.

**VIRGINIA**  
Chemicals

ESOTOO • KINETIC CHEMICALS "TREDON" REFRIGERANTS  
V-METH-L • CAN-G-GAS • PERMAGUM • PRESSTITE TAPE  
SUNISO REFRIGERATION OILS

Available in Canada and many other countries



Fittings, too, are easily covered with Presstite.



Prevent trouble before it happens—with Presstite.

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Joints are completely self-sealing.





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## BECAUSE YOU QUALIFY!!

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are chosen!*

*Only the **BEST**  
editors are chosen!*

*Only the **BEST**  
articles are chosen!*

You have been chosen to receive COMMERCIAL REFRIGERATION & AIR CONDITIONING because you're an important factor in the merchandising, sales, installation and servicing of air conditioning and refrigeration equipment in your community. Your local air conditioning and refrigeration wholesaler **pays us** for your subscription.

COMMERCIAL REFRIGERATION & AIR CONDITIONING readers are hand-picked, carefully selected by progressive air conditioning and refrigeration wholesalers—strictly on the basis of a company's activity in this industry and your position in the company. **THAT'S FRANCHISE CIRCULATION.**

The editorial staff of COMMERCIAL REFRIGERATION & AIR CONDITIONING is headed by men of long experience . . . men who are recognized as authorities and specialists in this field. Each is chosen for his specific knowledge of one phase or another in it.

Editorial material is carefully planned and presented to help our readers do a better job and make more profits.



## Commercial Refrigeration & Air Conditioning

1249 ONTARIO STREET • CLEVELAND 13, OHIO



will provide that capacity. Two 3-hp units will make up a 6-hp system. It is even possible—and it has been done successfully many times — to build up an 8-hp system by duplexing a 3 and a 5-hp unit on a single room. If this is done, however, extreme care should be exercised in sizing the evaporators.

Our experiences with the hospital installation mentioned earlier in this article were recalled to mind by the recent unfavorable publicity in connection with the Salk polio vaccine program. Unlike many other biologicals, this vaccine is reported to be extremely sensitive to temperature change. Some of the difficulties encountered with this vaccine have been directly attributed to failure of the refrigerated facilities in which the live virus was stored during the manufacturing processes.

In another instance, one of the national manufacturers of this serum destroyed an entire batch, rather



than risk using it, simply because a failure of refrigeration equipment had exposed the vaccine to temperatures considered dangerously high.

No doubt many refrigeration dealers and contractors who have had any appreciable experience with hospitals and doctors have been disturbed, as has this writer, by their extremely casual approach to refrigeration problems. Many hospitals today are using completely outmoded or outworn refrigeration equipment. This is true despite the recent improvement in their financial position which many of them have experienced.

It is to be hoped that the attitude of these people and institutions to-

ward all refrigeration problems involving such vital phases of their activities as vaccine, blood, and bone storage will be changed by the impact of these incidents which have occurred in connection with the polio vaccine program.

Hospitals today, by virtue of their generally inadequate refrigeration facilities, should constitute an excellent source of business for refrigeration firms all over the country. On the other hand, it is extremely important that refrigeration dealers and contractors be ready to equip these institutions with the most dependable

type of refrigeration systems possible. The duplex system, as described in this article, will do this job.

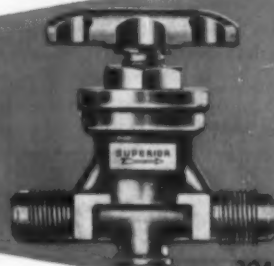
#### CANADIAN DISTRIBUTOR APPOINTED BY KINNEY

Williams & Wilson Ltd. of Montreal has been named as eastern Canada distributor for Kinney Mfg. Div., New York Air Brake Co. The firm will handle Kinney vacuum pumps and equipment, and Kinney liquid handling pumps.

## Two Money-Savers from the Superior family of fine valves

### Line Valves

2 way, 3 way, Angle  
in flare and sweat connections



304

Rugged, job-engineered globe and line valves by Superior are an asset to any refrigeration system. You start to save money from the very day you specify Superior because you get quality without a premium price tag. And faithful, dependable service from each valve adds to the savings for years to come. *Be specific, ask your wholesaler for Superior Valves!*

### Globe Valves

sizes— $\frac{1}{8}$ " thru  $4\frac{1}{2}$ "  
also angle and globe check



480

## Superior valve and fittings co.

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# COMMERCIAL REFRIGERATOR SALES NEWS

## Question of the month:

## Do You Know Why You Lost That Sale?

The reason underlying the loss of any sale is vital information for management. Knowing *why* sales are lost may very possibly enable management to cut down the number of lost orders.

A very simplified form specifically designed to help management put its finger on this "missing link" in the chain of sales information has been effectively used

Date _____	
WE LOST THIS ORDER TODAY	
From _____	
Address _____	
For: _____	
Because _____	
By: _____	

by a concern in another industry, and the National Commercial Refrigerator Sales Association suggests that it might very well be adapted to the uses of dealers and distributors in this field. A copy of this form is reproduced with this article.

In commenting on the use of this form, the company has indicated that it requires all salesmen

### SALESMEN MAKE TOUR OF BALLY PLANT

As the first step in a new distributor education program, Bally Case & Cooler Co., was host to 40 salesmen in a tour of its plant at Bally, Pa.

The salesmen were from the S. J. O'Brien Corp., New York, N.Y., distributor for Bally products. Their inspection of the factory's production techniques was described as part of a continuous new effort to acquaint Bally distributors in all parts of the nation with a more complete understanding of the basic merits of the company's products.

to use it to record every sale lost, regardless of the reason.

Price apparently is not a substantial reason, as this company figures that only 2 or 3% of the orders they lose result from higher prices. The form, however, has been beneficial to this firm's management in enabling them to correct some of their ideas on purchasing, in revising their inventory of certain items, and in taking on new products.

### NCRSA ADDS 2 MEMBERS

Enrollment of McCray Pacific, Inc., Los Angeles, Calif., and Pond Equipment Co., Minneapolis, Minn., as distributor members has been announced by National Commercial Refrigerator Sales Association.

### COMMERCIAL UNIT SALES CONTINUE UPGRADE

Total dollar sales for the first quarter of 1955 showed an increase of 12.81% over the same period of a year ago, according to reports compiled by National Commercial Refrigerator Sales Association from information received from its distributor members.

Net profit before taxes showed a 15.84% increase over the first three months of 1954, while inventory as of March 31 was up only 1.25% over that of the same date last year. Accounts receivable, as of that same date, showed a somewhat greater gain of 9.20%.

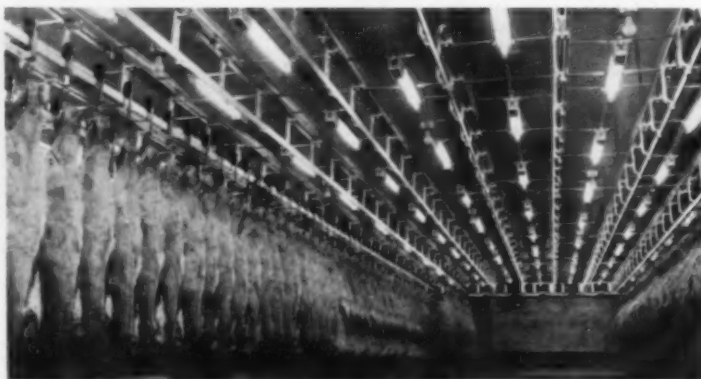
### CARRIER AIDS DEALERS IN CHAIN STORE SALES

To negotiate sales of air conditioning units to chain stores, Carrier Corp. now has arrangements for direct contact with the buyers through 26 district and branch offices.

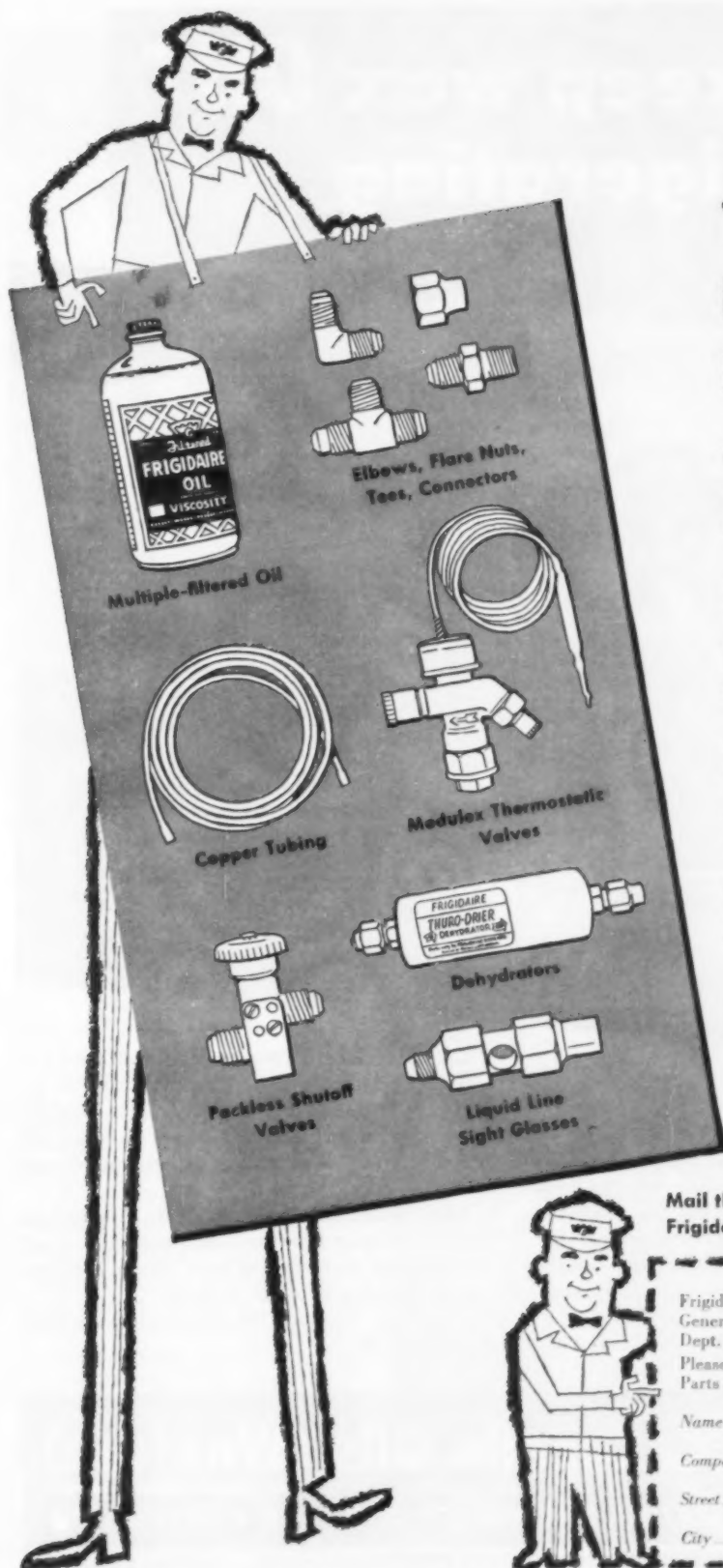
In such arrangement, the Carrier representative acts as an agent for the dealers in whatever localities the equipment is to be installed. This makes it unnecessary for dealers to attempt to make sales by long distance communication with the buyers.

The program already is proving highly successful, according to John M. Bickel, vice president.

### ANOTHER PROFIT POSSIBILITY IN FOOD STORE SALES



**TENDERNESS IN MEAT** is achieved more rapidly by the use of Westinghouse "Sterilamps," as shown in this recent installation for Bohack's, a chain of Long Island food stores. The lamps give off ultra-violet rays which keep the atmosphere free from bacteria and mold spores. This permits the storage room to be held at a temperature slightly higher than would otherwise be possible, and thus allows the aging process to be speeded about 12-fold. Similar lamps also are used in numerous other refrigeration and air conditioning applications.



## The long line of Precision-Built Frigidaire parts assures better, longer lasting results!

No matter what the job, you can always be sure that the right parts and accessories are available whenever you want them. For Frigidaire maintains 42 well stocked parts depots all over the country.

So when you want the right part—use genuine Frigidaire parts. You'll be sure of a job finished quickly—and without call backs due to faulty parts—also customers are assured of dependable, long lasting, quality installations.

And don't forget, parts aren't all that Frigidaire has to offer. You'll find Frigidaire District Headquarters can lend a hand on tough service problems, too.

## Frigidaire

### Precision-Built Service Parts and Accessories

Mail this coupon today for the new  
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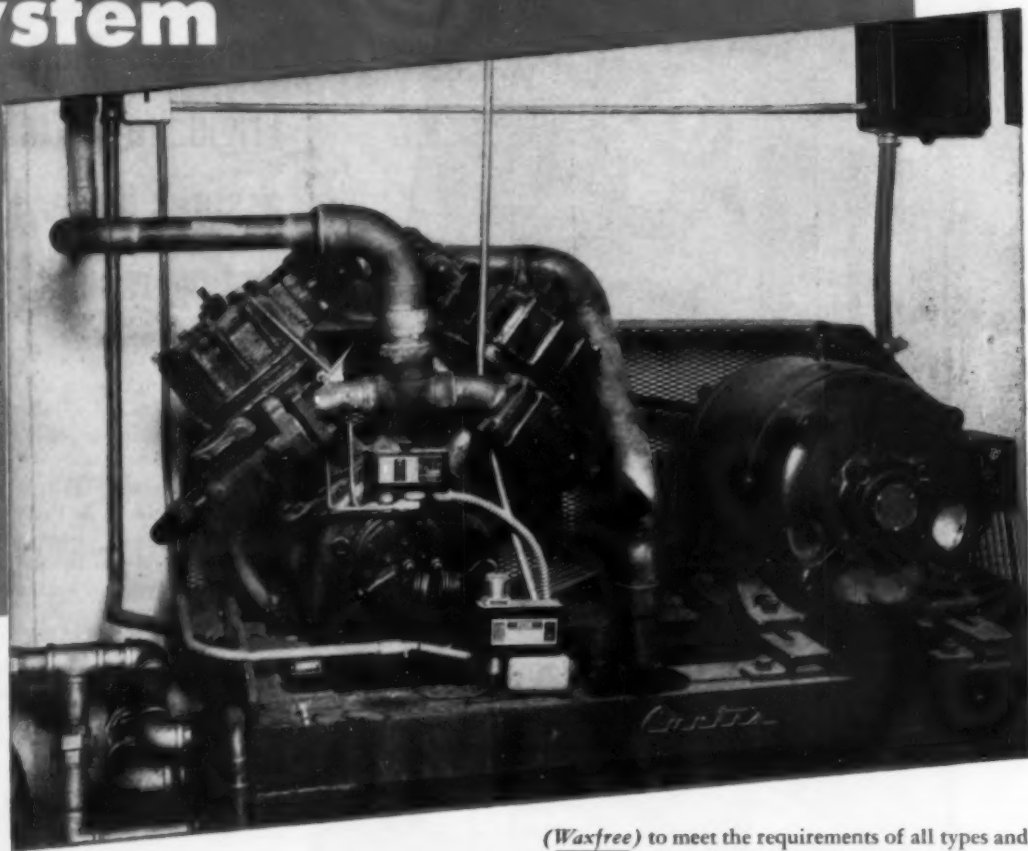
Name

Company

Street

City  Zone  State

# How to keep wax OUT of a refrigerating system



**USE** the oil that won't precipitate wax in systems even at temperatures of minus 100°F. — *Texaco Capella Oil (Waxfree)*. You'll assure smooth, clean, trouble-free performance—and get top efficiency.

*Texaco Capella Oil (Waxfree)* has outstandingly low haze and floc temperatures, remarkable stability and resistance to oxidation. In addition, it does not foam and is compatible with all refrigerants.

There is a complete line of *Texaco Capella Oils*

(*Waxfree*) to meet the requirements of all types and sizes of refrigerating compressors. Available in 55-gallon and 5-gallon drums, 1-gallon cans—and the most widely used grades in 1-quart containers. All are *refinery-sealed* to protect original purity and quality.

Let a Texaco Lubrication Engineer help you get highest efficiency from your compressors. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.



## **TEXACO Capella Oils (Waxfree)**

**FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS**

TUNE IN . . . TEXACO STAR THEATER starring DONALD O'CONNOR or JIMMY DURANTE on television . . . Saturday nights, NBC.

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AUGUST, 1955 • COMMERCIAL REFRIGERATION



# CONTRACTORS

NEWS • ACTIVITIES • PLANS

## Industry's Basic Definitions Offered For Inclusion in Proposed FTC Rules

**A**T a special meeting in Washington, D. C. June 22 in connection with the proposed Trade Practice Rules setup for the refrigeration and air conditioning contracting industry, agreement was reached on some suggested "definitions" which the Federal Trade Commission will consider in drawing up any set of Trade Practice Rules.

Following are the definitions agreed upon by those attending the conference:

"Industry member (contractor) is any person, firm, or corporation, or organization engaged in air conditioning."

"Air conditioning and refrigeration contracting industry includes those engaged in the installation, sales, maintenance, and repair of the products hereinafter defined; manufacturers included as they engage in contracting or are industry members. Industry products include all appliances, equipment, and apparatus handled by the industry as above defined which are capable of being used for air conditioning and refrigeration purposes."

### Opinions Invited

"Definition of air conditioning—the simultaneous control of all, or at least the first three of the following factors affecting both the physical and chemical condition of the atmosphere within an enclosure—temperature, humidity, motion, distribution, pressure, dust, bacteria, odors, toxic gases, and ionization."

H. Paul Butz of the FTC staff, who conducted the hearings, pointed out that the Commission still wishes to hear further expressions

of opinion on any part of the proposed rules, and invites all who wish to comment or make suggestions to write to him.

### Study to Follow

As the next step in the proceedings, if they follow the usual procedure on Trade Practice Rules, the FTC will issue its proposed set of trade practice rules (the ones thus far have been developed under the sponsorship of the Refrigeration and Air Conditioning Contractors Association) and will set a date for a public hearing (probably some time after Labor Day).

Then, if all follows the general pattern, the Commission will study the proceedings from this hearing and will issue a final set of trade

practice rules, which will become effective 30 days after issuance.

The proposed trade practice rules as set forth at the May 30 conference followed generally those found in FTC rules for other industries—rules against deceptive practices, prohibited discriminations, misrepresentation of products, etc.

One proposal which drew some special interest was proposed Rule 5—Misrepresenting Products as Conforming to Standard—which reads:

"In connection with the sale or offering for sale of industry products, it is an unfair trade practice to represent, through advertising or otherwise, that such products conform to any standards recognized in or applicable to the industry when such is not the fact."

### BBB PLANS STUDY OF ROOM COOLER SELLING

Formation of a committee to work with the room air conditioner industry on problems in that field was approved by the Association of Better Business Bureaus at its recent annual convention in Minneapolis.

Just prior to taking this action, the ABBB heard Ray Kromer, ex-



**SALES ENGINEERS** of Enterprise Heat & Power Co., Chicago, receive special training in facts pertaining to several makes of air conditioners by attending a five-day school operated by this firm. Similar courses are to be offered at intervals. Twenty-five men attended the first classes to augment their knowledge of the Shana, Carrier, and USairco lines. Above, M. S. Simon, one of the school's supervisors, points out certain features of one of the lines while several members of the class follow his lecture closely.



It's just good sense...

Wagner replacement parts for Wagner Motors—

**Genuine Joe Says:**

**"when it comes to  
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brushes for Wagner Motors  
are Wagner Brushes"**



Only brushes of the same grade  
of carbon as the originals give you  
**LIKE NEW** motor performance!



There is a difference in carbons.

"That's why, when you replace the brushes in your Wagner Motor, be sure to replace them with genuine Wagner Brushes. Replacement brushes must be of the same grade of carbon as well as the same size as the originals—in order to assure 'like-new' motor performance.

"For your Wagner Motor—maximum performance, commutator and brush life is possible only with Wagner Brushes. Identify them by the name Wagner stamped on every brush."

**Send for your copy of MU-40 now!**

Every repair shop needs this valuable electrical service catalog. It gives you the catalog number of all Wagner Motor parts. It's yours for the asking.

**WAGNER ELECTRIC CORPORATION**  
6442 Plymouth Ave., St. Louis 14, Mo., U.S.A.

MOTORS • BEARINGS • STANDARD ROTORS  
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**OVER 850 AUTHORIZED SERVICE STATIONS  
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MS55-A

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executive vice president of the Refrigeration & Air Conditioning Contractors Association, tell of some of the dangers in home air conditioner merchandising in view of the public's being "suddenly enamored with air conditioning."

According to a spokesman, problems might develop along the lines they did when the public became strongly aware of television. He added: "At least the potential is there."

It is believed that the committee will attempt to pinpoint danger spots in the field and prepare bureaus for effective work in those areas. Development of information desired by the public on air conditioning is planned.

#### **Houston Code Cited**

How an advertising and selling code for room air conditioners was put into effect in Houston was described by C. E. Buehner, executive vice president of the BBB in that city, in a committee report on room units.

He said action in Houston became imperative because "sad" and unethical merchandising practices were being used in selling many room air conditioners.

Buehner said that at the end of 1954, 45,000 room units had been sold in Houston and that there were 4,500 central residential installations and 4,930 central commercial installations. Since the end of the war and up to the end of last year, he stated, Houston has sold 128,557 window units for a total tonnage of 277,864.

Many complaints were received on poor installation, false comparative prices, failure to designate old models, etc. "We were called the 'dumping ground' for every manufacturer in the country," it was noted.

Last spring, the BBB met with various industry representatives to draft a 16-point room air conditioner advertising and selling code. This was patterned after the first national code and was similar to the one adopted in May.

The proposed code was sent to 250 dealers for approval. It was accepted by 80% of them, according to Buehner. One of the several groups that offered to assist in the program was the local chapter of RACCA.

## DON'T SKIMP . . .

*Continued from page 43*

floor heat. Another objective in this arrangement is to prevent the formation and thawing of frost behind the insulation such as might occur if bolts had been used.

In the other two rooms standard coolers are suspended from the ceiling with bolts through the insulation and into the regular steel beams but this was deemed unobjectionable because these rooms offer less differential of temperature.

A fourth room, for the compressor units is adjacent to the zero storage room. There are four of these machines, all mounted on a concrete slab.

### Four Compressors Used

Two 15-hp compressor units serve the four automatic defrost evaporators in the zero area. Two re-evaporators in this circuit are installed in the compressor room.

Two 10-hp compressors serve the four standard coolers in the meat room as well as the fifth standard cooler in the produce room. Each of these compressors is equipped with an auxiliary receiver connected with its main receiver to increase the capacity for cooling the refrigerant.

Freon 12 is used in the entire installation, and the condensers are water-cooled.

### Plus Capacity Provided

In line with the desirability of having excess capacity in a system for purposes as in a case such as this, it is noteworthy that there is a total of 30 hp of compressors to serve the zero room in which the estimated cooling requirement is 10 tons. Likewise, there is 20 hp to serve the other two rooms where normal cooling requirement is between 8 and 10 tons.

Thus, either of the 15-hp units is alone normally adequate to cool the zero room, and either of the 10-hp units will normally suffice for the remainder of the storage space.

In such reserve capacity of the equipment, the Heinz company demonstrates its belief that when food quality is paramount it pays to take no chances.

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## best on the job... United Copper Tubing!

The new V-type sealed ends on UDD Copper Tubing are just one of many superior factors which have made this product a leading industrial choice in production operations all across the country. UDD Copper Tubing comes packed in drums with sizes plainly marked for easy use.



UDD V-Type Sealed End  
Assuring  
Moisture Free,  
Clean, Bright Surface

Try The United Brand  
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Ask for New UDD Copper Tubing Folder.

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## ROTARY SEAL

## Replacement Units

The original replacement units—  
performance-proved in many thou-  
sands of installations  
during almost a  
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EASY TO  
INSTALL  
ECONOMICAL  
EFFICIENT IN  
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Available in a  
wide range of  
sizes for Com-  
mercial, Semi-  
Commercial,  
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and Household  
Refrigerator Compressors.



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14222

AT ALL  
LEADING  
JOBBER'S

"Seal with Certainty!"

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CHICAGO 14, ILLINOIS, U.S.A.

CANADIAN AGENT: 2025 ADDINGTON AVE., MONTREAL 28, QUEBEC



## SERVICEMEN COLLECT

Continued from page 45

spot to do what we can about it before real trouble develops."

Needless to say, Ace O'Hara Co. keeps up individual payment books, and credits each book with the quarters collected, which are run through a counting machine daily in the company office. Twice a month, Huntress sends the bank a draft which covers all payments on contracts outstanding with the financing institution, and thus keeps "everyone happy".

Banks (as might well be expected) are not only enthusiastically in support of the O'Hara plan, but likewise, are potent sales helps in suggesting Ace O'Hara refrigeration equipment when they are financing new stores, industrial plants, etc., which make use of refrigeration.

The meter plan has likewise made the operation of a repair service which covers over almost of Arizona more feasible. On the

wall of the Ace O'Hara Co. office is a huge map of the state, on which colored pins designate O'Hara installations. Most of the pins represent "collection calls" as well as potential repair needs, and since the servicemen are routed regularly, the chances are that they will be able to "kill two birds with one stone."

"Some of our installations are as far away as eastern California," Huntress indicated, "but all of them receive the same close attention, the same guarantees, and repair care as the customer within the city limits."

## USAIRCO NAMES TWO

Two Florida companies have been named to handle products of United States Air Conditioning Corp. Florida West Coast Distributors, Inc., St. Petersburg, will be a distributor for a complete line of air conditioning, heating, and ventilating products. Automatic Cooling & Heating Co., also of St. Petersburg, will be a dealer for Pinellas county.

## ADMIRAL TO PRODUCE IN ILLINOIS PLANT

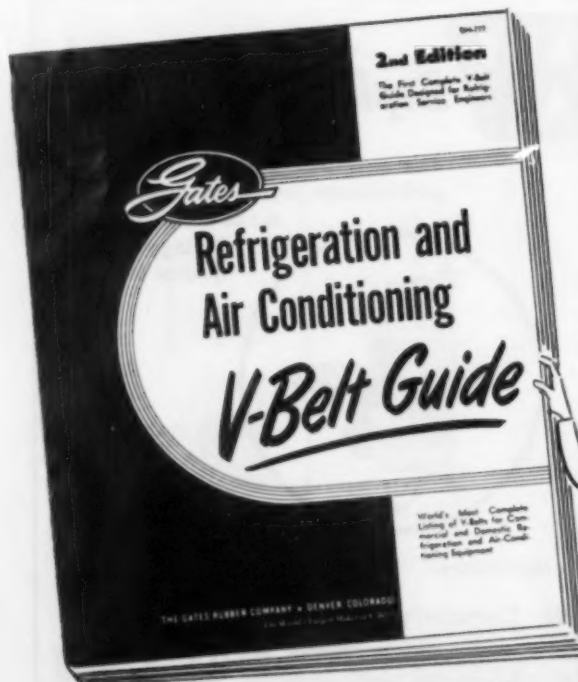
Admiral Corp. has announced plans to manufacture its 1956 series of room air conditioners at its midwest divisional plant, Galesburg, Ill.

John B. Huarisa, executive vice president, said the advantages of having these units produced in its own plant will include the means of making mixed carload shipments of all Admiral appliances to the company's distributors.

## OWNERSHIP CHANGED IN OHIO COMPANY

Carl Weaver and Frank Bennett have announced sale of their stock ownership of Refrigeration Economics Co., Canton, Ohio, to Carl Howenstine and Associates who will continue the wholesale and refrigeration supply business.

Weaver and Bennett will continue to operate Recoy Products Co., also at Canton, in the manufacture of air conditioning units, components, and related items.



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AUGUST, 1955 • COMMERCIAL REFRIGERATION

# CONVENIENCE BY THE FOOT

You can do a better job—faster and easier—when you use Wolverine's new flat roll of tube in the round carton that rolls.

This all-new packaging innovation has a host of features specifically designed to help Master Plumbers, refrigeration and automotive servicemen and heating contractors.



Here, for example, is a carton that permits you to feed the tubing right from the package using it as a reel. All you do is make your connection or hold the tubing with your foot at one end, reel the carton back and there's your tube straight and free from awkward kinks.

This carton helps you in still other ways. Because it is round it rolls—like a hoop—from truck to job site or wherever needed. When carrying is necessary just slip your arm through the convenient center hole. Alternated nomenclature and color coding make content identification easy. Important, too, is the fact that un-

used tubing remains in the carton—protected to the very last inch from dirt and damage and much easier to handle.

*And that isn't all.* This carton contains Wolverine copper tube—the tubing that is always clean, dry and easy to bend in the shop or on the job. Remember, ask for "the roll of tube that rolls"—specify Wolverine the next time you visit your wholesaler.

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*Buy from your Wholesaler*



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## CANDY MAKING . . .

*Continued from page 49*

with a similar casing, is 97' deep and yields 475 gpm at 80-lbs. pressure, using a 15-hp pump. Water from both wells has a year-round temperature of 54 F.

Because the company counts on its general air conditioning system as an indirect auxiliary to product refrigeration, it will be convenient to consider the former as the starting point of the numerous cooling combinations. In this plant the general cooling is accomplished by the use of seven Trane units which feed into ducts hung from the ceilings on each of the three floors. The units are supplied with steam heat when warming is required in winter. In summer they are chilled with water direct from the wells.

### Well Water Needed

Well water also is used for direct cooling of candy at some of the stages of manufacture. Its greatest volume, however, is required for cooling the battery of York compressors which serve certain other refrigerating and air conditioning units.

In summer, well water additionally is used to cover the roof of the building to a depth of three inches.

All hot waste water is discharged directly into a nearby creek.

There are six compressors located in one area of the basement, with capacities of 15, 15, 10, 10, 7½, and 5-tons. All operate with Freon 12. Two others, of 3 and 7½-ton capacity, are in another basement room.

### Cold Storage Important

One of the 10-ton compressors serves the basement main storage room. Here, refrigeration is supplied both for the storage of certain raw materials—primarily chocolate—and also for some finished products awaiting shipment.

In the storage rooms, the temperature is maintained at 54 F year-round, with 40% humidity. Although the humidity can be partly controlled by the same coils that cool these areas, there are

also six small dehumidifiers used here, with a capacity of 10,000 cfm each.

In the conversion of raw materials to finished products, the hard candy and chewy-centers are first cooked in kettles over fires or steam. When cooking is complete, the molten candy is poured onto any of several steel-top tables. Inside the hollow tops, water from the wells is circulated to cool the candy to the temperature required for cutting, pulling, shaping, or other processing.

Once cut into bars or other shapes, or molded into fancy patterns, this kind of candy moves out of the cooking rooms onto belt conveyors which extend across



an adjoining room where candy and employees are both cooled by the same equipment.

Overhead coils and blowers—served by refrigerant from one 15-ton compressor—maintain a temperature of 55 F throughout this cooling room, so that "air conditioning" here means a level of coolness that requires employees to dress warmly even in July. However, employee comfort in this case is only a by-product of the main objective which is to create a room-wide condition favorable for handling the candy itself.

While the same basic temperature is maintained throughout the room, a supplementary procedure is used so that this temperature—without going still lower—will complete the product cooling at the production speed required. This is accomplished by means of a long metal pipe located above and paralleling the belt conveyors.

Blowers force room-temperature air into the pipe, whence it is expelled downward through slots onto the moving candy. By thus air-blasting the candy, a cooling job can be done just as effectively at 55 F as might be done in slow-moving air at a temperature perhaps 10 degrees lower.

### Low Humidity Required

Perhaps more importantly in this room than in any other part of the plant a high degree of dehumidification must also be maintained. For this purpose another six dehumidifiers are used to supplement the effect of the coolers, and the relative humidity is maintained at 40%.

So sensitive is hard candy at this time that precautions are taken to assure that no water will be introduced into the room even for a cleaning operation. "An inexperienced janitor who might try to mop a spot on the floor with water would raise the humidity so much that it would take an hour to get back into production again," says Wonders, with a grimly reminiscent expression in his eyes.

### Cooling Tunnels Used

In the production of chocolate-covered candy, an additional stage of processing is employed. The centers move onto large mesh wire belts which pass through a bath of melted chocolate. As the coated pieces come out of the liquid, they slide onto other belts which pass through refrigerated tunnels to solidify their coatings.

There are four of the tunnels in the McAfee plant. The first is 24" wide and 86' long. Its cooling coils are served by the 5-hp compressor in the basement. The second is 32" wide and 86' long. It is supplied by a 10-hp unit. The third is 24" wide and 52' long, and a 7½-hp compressor suffices. Tunnel No. 4 is 24" wide and 36' long. It is served by another 7½-hp compressor.

Belt speeds in the tunnels are 18 fpm. Cooling coils are placed so that the chilled air first moves between the upper and lower belt levels, starting at the same end where the candy enters. This permits the initial coldness to be concentrated on the under sides of the

candy pieces. After moving to the opposite end of the tunnel, the air rises to the upper belt level and then moves back—striking the candy from above—until it is again at the starting point, to be recooled and recirculated.

The tunnel air is at 32 F when it first leaves the coils. It is at about 40 F by the time it reaches the end of the lower level, and it is at about 50 F by the time it reaches the end of the upper level.

When the candy has passed through the tunnels it moves by belt directly to wrapping machines in the same room. This wrapping-room is also air conditioned, to a temperature of about 60 F and a relative humidity of 40%. Its coolers and dehumidifiers are served by the second 15-hp compressor.

The 3-hp compressor serves a second storage room in the basement.

#### Temperature Range Important

In all the tunnels and cooling rooms a close margin is required both for temperature and humidity. While the humidity range is especially important in the hard candy room, the temperature range is especially important in the chocolate cooling tunnels.

Unless the tunnel temperature is sufficiently low, the chocolate would be too sticky and too soft for wrapping upon completion of the time allowed for cooling. Yet if the temperature went too low, the chocolate color would turn to white, and the candy would lose much of its salability.

#### Conditions Seldom "Normal"

Even under normal circumstances, the problem of refrigeration and air conditioning in such a plant presents an unusual series of relationships between its various components—with different areas at varying temperatures and humidities, yet with each having some effect on the others. And even so, the circumstances are seldom "normal." In some seasons, the main conditioning system and the product-cooling systems are all working to the same objective: coldness. In other seasons, however, the main conditioning sys-

tem is pouring steam-heated air into some areas while the coolers are still being operated in others.

Also, there are variations within the seasons, caused by changes in production schedules which, for example, may temporarily reduce the number of cooking fires in the hard candy area without any comparable increase of heat elsewhere—because all chocolate cooking is done in a tank located in a segregated room in the basement.

The breadth of seasonal and other variations from normal is

one of the reasons that air conditioning and refrigeration in this plant are provided by several systems instead of by a single unified system. It is also one of the reasons that well-temperature water, air from outdoors at winter temperatures, and cooling produced by compression-expansion of refrigerants are all utilized by McAfee to accomplish the results that are desired.

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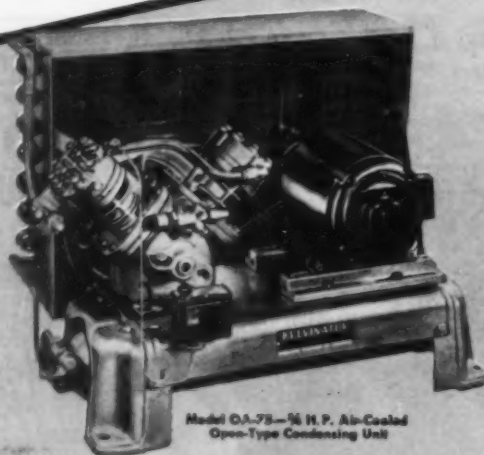
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AUGUST, 1955 • COMMERCIAL REFRIGERATION

## USEFUL

### BULLETINS • BOOKLETS • CATALOGS

**TECHNICAL DATA** on relief valves, check valves, and low micron testing of standard line and globe valves is included in a new 24-page catalog (R-5) of Superior Valve & Fittings Co. Size and application information for a complete line of brass valves, accessories and fittings for refrigeration and air conditioning equipment are given.

Circle No. 151 on Reader Service Card

**SPECIFICATIONS** and application data relating to "Angle-Air" unit coolers are included in Bulletin 109-55 of Tenney Engineering, Inc. Units range in size from 2600 to 54,000 Btu.

Circle No. 152 on Reader Service Card

**AN ENLARGED CATALOG**, now 20 pages, has been issued by A-P Controls Co., illustrating and describing the entire "A-P" line. Included are charts, selection data, capacity tables, and other information to aid in determining sizes and types suitable for refrigeration needs.

Circle No. 153 on Reader Service Card

**FLOAT VALVE CONTROLS** are the subject of Bulletin 201-F, issued by Frick Co. The 8-page publication employs text, photographs, and diagrams to show advantages of these products and several installation layouts.

Circle No. 154 on Reader Service Card

**BIGGER ICE CREAM SALES** are the target of a wide variety of refrigerated cabinets illustrated in a 28-page catalog of Kelvinator Div., American Motors Corp. Title is: "Make 1955 Your Best Ice Cream Year." Also available is a folder on Model K-174, a bottled beverage vendor.

Circle No. 155 on Reader Service Card

**VIBRATION DAMPING** uses of molded rubber in machinery mounts, bushings, bearings, and instruments, with applications including refrigeration equipment, are described in a 12-page guide (No. 701) prepared by Industrial Products Div., General Tire & Rubber Co.

Circle No. 156 on Reader Service Card

**MANUFACTURE OF ICE** by the "inverted rain" process is described in an 8-page brochure published by Prolesel, Inc., producers of the "Kleer Kube" ice maker. Explanations include the purifying effect on this process in relation to such problems as chlorine odor.

Circle No. 157 on Reader Service Card

**EXPANDED LINE** of oil separators for refrigeration systems is described in 8-page bulletin of Temprite Products Corp. Sizes and capacities of various models are given; also a selector chart for adaptor blocks used with various makes of condensing units.

Circle No. 158 on Reader Service Card

(Turn to page 71 for more Useful Literature)

• AIR CONDITIONING • AUGUST, 1955

## THE LATEST DEVELOPMENT IN LOW TEMPERATURE REFRIGERATION



INSTALLATION: BILKER SUPERMARKET, CINCINNATI, OHIO

## ELECTRIC *Heat-Cel*® AUTOMATIC DEFROST

- Heat for re-evaporation supplied by low wattage, long life ELECTRIC HEATER.
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\* Approved by Underwriters Laboratories

Write for Engineering Catalog DE.

Circle No. 52 on Reader Service Card





## 6 good ways to make **TRUCK REFRIGERATION** pay



Kold-Hold plates used in these trucks for delivery of Esskay Quality Meat Products keep the wide variety of luncheon meats as fresh as when they are packed. They keep the truck bodies clean, dry, sweet and odorless providing economical refrigeration for the meat products day after day.

A large midwestern dairy combines a blower coil with a Kold-Trux automatic system to refrigerate several wholesale milk trucks. Kold-Trux proves satisfactory in use with blowers, Serpentine Quick-Action plates and Kold-Hold Light-duty plates, depending on the requirements.

United Farmers of New England employs Kold-Hold Hold-Over plates in its refrigerated wholesale trucks. Built by Boyertown Body Works, the insulated body is brought down to 35 degrees and in eight hours on the route, the temperature reaches only 48 degrees. Truck capacity is 5,000 quarts of milk.

Both ice cream and milk are refrigerated in the same truck by Hage's Ltd., of San Diego, California, using one Kold-Hold Hold-Over plate in the milk compartment and 3 plates in the ice cream compartment. This keeps these products in perfect condition throughout the day's delivery runs. Body by Aluminum Body Corporation, Vernon, California.

Here are 6 proven systems of truck refrigeration that not only pay their own way but help increase your profits, too:

1. Kold-Trux Mobilmatic units with Kold-Hold Hold-Over plates;
2. Kold-Trux Mobilmatic units with Kold-Hold light-duty plates;
3. Kold-Trux Mobilmatic units with Serpentine Quick-Action plates;
4. Kold-Trux Mobilmatic units with Hydro-Pack Blower;
5. Kold-Hold plates with mounted compressor;
6. Kold-Hold plates with make-and-break assembly.

Which way is best for you? Our Kold-Hold engineers will be glad to work on your individual problem with you and help you select the system that is sure to make your truck refrigeration pay.

For the answer to your truck refrigeration problem, write for the new 16 page Kold-Trux Catalog No. KT-155.



Look to Kold-Hold for the latest developments in Truck Refrigeration

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## USEFUL LITERATURE . . .

*Continued from page 69*

**BACKLESS VIBRATION ABSORBERS**, for use in cooling equipment wherever vibration and noise are developed from pulsating pressure, are described in a 4-page folder of Packless Metal Hose, Inc. Application data and specifications, including limitations of proper curvature, are provided.

Circle No. 159 on Reader Service Card

**FLEXIBLE TUBE VIBRATION DAMPERS** are listed by size, working pressure, and fitting relationships in a table of specifications, published in leaflet form by Flexonics Corp. Installation diagrams are also included.

Circle No. 160 on Reader Service Card

**VARIOUS MODELS** of coolers are described in new literature of Berco Co. Featured are model "C 15", a compartmental unit, and the "DBR" line of coolers in four sizes for dry operation only.

Circle No. 161 on Reader Service Card

**THE COMPLETE LINE** of refrigeration and air conditioning accessories manufactured by Madden Brass Products Co., is described in a new catalog (R-655). Several new valves, swivel tees, charging lines, flare fittings, and a hermetic 4-in.-l valve are featured.

Circle No. 162 on Reader Service Card

(See page 94 for Air Conditioning Literature)



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**Features** your  
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Model W8526 (pictured here) is 6-foot wide, 78" high and 30" deep with four sliding doors. It has 50 sq. ft. of shelf area and will hold 48 cases of 12-ounce bottles. Quality constructed throughout—exterior ends of white life-time porcelain; back, top and bottom, galvanized iron. Interior—top and bottom of white porcelain. Frame—No. 1 kiln dried Douglas Fir, screwed throughout 3/4" Fibre-glass insulation. Heavy wire shelves, plated to resist corrosion—adjustable on 1/2" centers. U.L. approved lights. Automatic door switches. Cooling system—ceiling hung forced air evaporators.

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Circle No. 54 on Reader Service Card  
& AIR CONDITIONING • AUGUST, 1955



One of three Goulds Fig. 3750 pumps circulating chilled water in air conditioning system in big color processing building of Eastman Kodak Company, Rochester, N. Y.

### *They help keep roses red and violets blue*

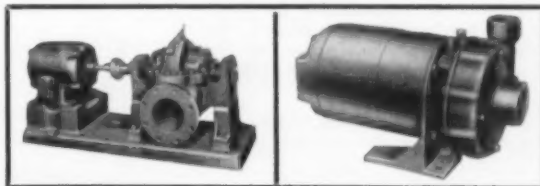
Processing color photographs requires extremely close control of temperature at all stages.

In the big color film and print processing building in Kodak Park, in Rochester, N. Y., three Goulds pumps like the one shown above help maintain the correct temperature by circulating 50° water through heat exchangers serving process work rooms.

The critical nature of the process means that these pumps must stay on the job 24 hours a day—day in and day out—and these Goulds pumps have been doing just that for the last two years.

You can insure the same kind of dependable pump performance in your air conditioning installations, too, by specifying Goulds pumps. There's a Goulds pump for every liquid handling job—designed from the experience gained over a century of pump manufacture, and ruggedly built to give long, trouble free service.

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Goulds popular "dose-cupl'd" Fig. 3642 and Fig. 3643 pumps provide compact efficiency, simplicity in small installations. In sizes from 1/4 to 5 HP. Capacities up to 175 GPM, and heads to 140 ft. For additional details write for Bulletin 624-A-3.

Goulds Fig. 3405 double suction pump offers many advantages for larger installations. Available in 19 sizes, providing capacities up to 6,400 GPM, heads to 260 ft. For full details write for Bulletin 721.6.



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Circle No. 55 on Reader Service Card

# NEW PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

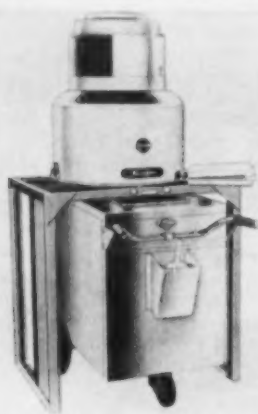
(For Air Conditioning Products turn to page 96)

## Mobile Ice Unit

**Product:** Automatic ice maker combined with manually operated delivery cart.

**Manufacturer:** Gennett & Sons, Inc., Richmond, Ind., and York Corp., York, Pa.

**Features:** Model DER-2B, "York" ice-maker, mounted on stand, delivers ice into insulated, three-wheel "Gennett" cart. When



cart is full thermostat stops production. Second cart may be used while first is serving another area. Combination is recommended for hospitals, hotels, and supermarkets. Ice maker can produce up to 300 lbs. of ice a day. Carts are in 50, 75, 150, and 250-lb. sizes.

Circle No. 101 on Reader Service Card

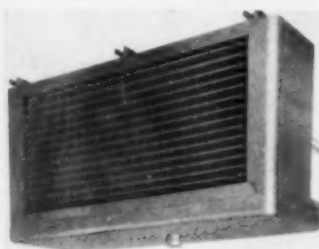
## Unit Coolers

**Product:** "Flocold" unit coolers in three types.

**Manufacturer:** Drayer-Hanson, Inc., subsidiary of National-U.S. Radiator Corp.

**Features:** Three types available—for room temperatures over 34 F, for Freon with water defrost, and for ammonia with water defrost for above or below 34 F. Units for over 34 F are available in 11 models with Btu capacities from 340 to 4800 per degree t.d. Water defrost units are in seven models with Btu capacities

from 457 to 3600. Those for ammonia are in four models with Btu capacities from 1200 to 3600. Among advantages stressed are large, over-



lapping, propeller-type fans which eliminate metallic vibrations and keep noise to a minimum. A heat exchanger is furnished with each unit, carefully rated and balanced, to give maximum efficiency.

Circle No. 102 on Reader Service Card

## Special Dairy Case

**Product:** "Dairy Boy" display case for retail stores.

**Manufacturer:** Bally Case & Cooler Co., Bally, Pa.

**Features:** Designed solely for dairy products, case is 60" long, 36" deep, 59½" high. It will hold



303 quarts of milk in lower section, and 85 pints on mezzanine shelf which is also refrigerated. Top shelf, adjacent to compressor, has 1.6 sq. ft. of space for non-refrigerated items. Upper surface of case has 11.6 sq. ft. Construction is welded

all-steel with acid-resistant white porcelain interior and exterior, and stainless steel trim. Unit has ½-hp compressor controlled by capillary tube; is delivered ready to plug in.

Circle No. 103 on Reader Service Card

## Drink Dispenser

**Product:** "Mixomatic" soft drink mixer-dispenser.

**Manufacturer:** Dunhill Soda Fountain Corp., Brooklyn, N.Y.

**Features:** Units have dispensing tower with two, three, or four arms for different drinks. Correct quantity of syrup and constant carbonated water pressure are maintained



automatically. A revolving transparent display sign is located at top. Two-beverage size has 1/3-hp condenser and produces 150 drinks per hour. Three and four-beverage sizes have ½-hp condenser and serve 300 drinks per hour, but may be increased to 380 by changing from 15 to 25-gal. cooler. Top is stainless steel. Sides are baked enamel or stainless steel.

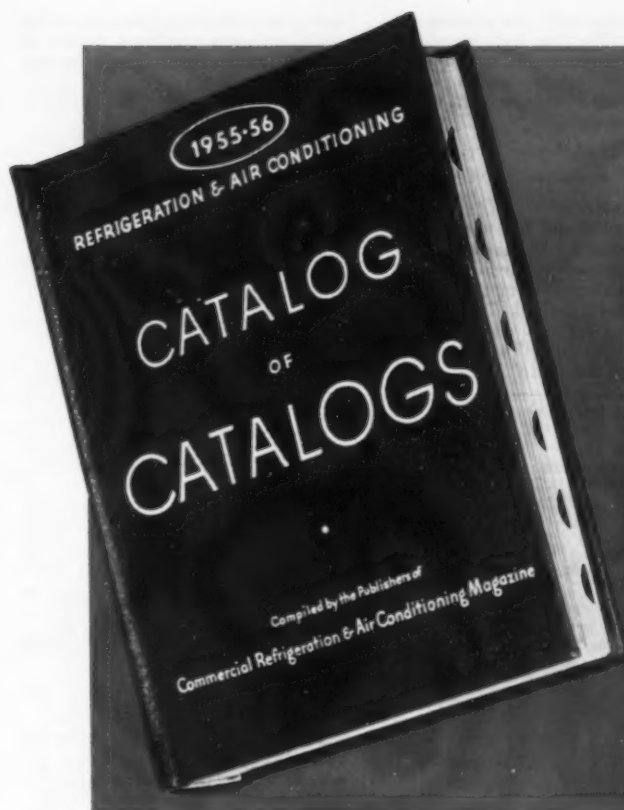
Circle No. 104 on Reader Service Card

## Absorption Units

**Product:** Absorption-type refrigerating units, to produce chilled water from hot steam.

**Manufacturer:** Carrier Corp., Syracuse, N.Y.

**Features:** Range of 11 sizes is available, from 100 to 700 tons. Units have no major moving parts and will adjust automatically from full down to virtually zero load with little loss of efficiency. They are designed to produce low-cost cooling wherever an economical source of heat such as natural gas is obtainable, or where it is available as a by-product of some process using steam. As machines operate on steam at low pressure, it may be obtained from back pressure turbines or in the exhaust of various processing operations. Light weight construc-



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#### CASE AND FIXTURE SECTION

Refrigerated case manufacturers' catalogs and specifications sheets answering problems in the application of packaged and remotely installed cases and coolers for merchandising or storage of all types of food and beverage products. Blueprints of practical store plans for typical food market layouts. Listings of manufacturers of this equipment.

#### COMPONENT SECTION

General engineering, contracting, and architectural working data, including comprehensive listings of components and accessories. Information to aid in the application of equipment in refrigerated or air conditioned areas. Bound-in manufacturers' catalogs and specifications sheets.

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City \_\_\_\_\_

State \_\_\_\_\_



tion permits installation on roofs. Silent operation also is a factor permitting installation in areas that otherwise would be unsuitable. Automatic controls reduce supervision to a minimum.

Circle No. 105 on Reader Service Card

#### Water Pump Systems

**Product:** Automatic pump systems for shallow and deep wells.

**Manufacturer:** Lancaster Pump & Mfg. Co., Inc., Lancaster, Pa.

**Features:** New line includes three models: "Turbo-Pak" for shallow wells; "Zephyr-Pak," a higher-capacity unit for shallow pumping;

and "Supreme-Pak" for shallow or deep wells. The line is designed especially to meet requirements of small homes, cabins, and summer camps, or other independent water supplying.

Circle No. 106 on Reader Service Card

#### Water Coolers

**Product:** Model 749 water cooler with shelves for 72 glasses.

**Manufacturer:** Star Metal Mfg. Co., Inc., Philadelphia, Pa.

**Features:** This model is one of 28 in line of self-contained coolers. Built-in system includes stainless steel welded cooling and storage

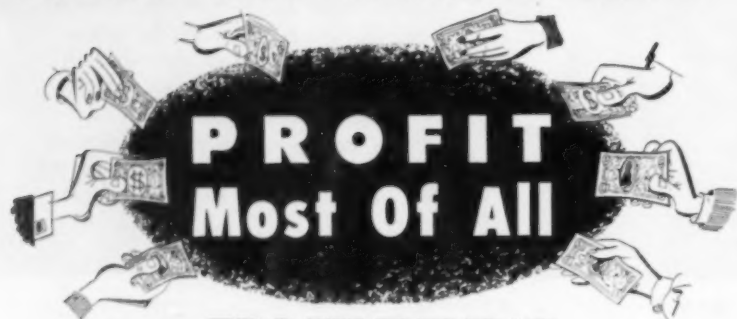
tank, twin tinned-copper evaporator coils, pressure regulator pre-set at 35 lbs., and double temperature con-



trols protecting against freeze-ups. Dimensions are 23" long, 21" deep, 60" high. Normal capacity is 150 to 200 glasses per hour. Slatted panel provides ready access to refrigerating mechanism.

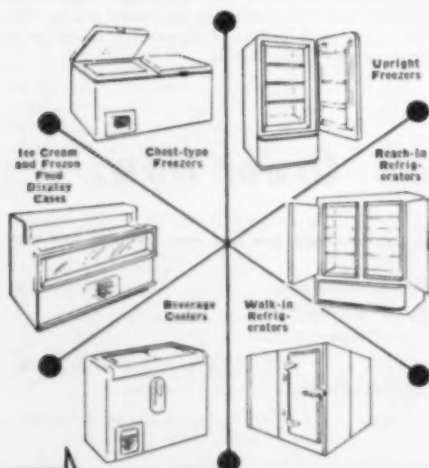
Circle No. 107 on Reader Service Card

## NOW! THE LINE THAT GIVES YOU EVERYTHING\*



### HOWARD'S

COMPLETE FILL-IN LINE OF QUALITY REFRIGERATION EQUIPMENT GIVES YOU NEW PROFIT POSSIBILITIES ON SALES YOU RUN INTO EVERY DAY!



#### GOOD NEWS for the REFRIGERATION TRADE

Howard's complete line of refrigeration equipment gives you every unit you need to clinch every sales opportunity on replacement, remodeling and new installations. Selling features are right, prices are right and, most of all, your profits are big! Full details by return mail.

Over 105 models of refrigerators, freezers and display cases for every commercial and domestic use!

WRITE TODAY TO:

**HOWARD**  
REFRIGERATOR CO., INC. • PHILADELPHIA 24, PA.  
50 YEARS OF QUALITY REFRIGERATION LEADERSHIP

Circle No. 56 on Reader Service Card

#### Blueprint Holder

**Product:** "Plan Hold" device for suspending blueprints or other papers in temporary or permanent file.

**Manufacturer:** Plan Hold Div., Air Comfort Co., South Gate, Calif.

**Features:** Device makes it unnecessary to fold, roll, or keep papers in shelves or drawers. Each



unit will hold from one to 150 prints without punching or drilling. Tightening or loosening of two wing nuts is all that is necessary to close or open these holders. Soft plastic end tips prevent holders from scratching when used on desk tops.

Circle No. 108 on Reader Service Card

#### Spray Enamel

**Product:** "Totrust" instant-dry enamel in pressurized spray cans.

**Manufacturer:** Wilbur & Williams Co., Boston, Mass.

**Features:** Enamel dries in minutes, is highly resistant to dampness

and corrosion. Suited for painting complete units or handling touch-up jobs. Available in 13 colors in containers up to 5 gal. size, as well as in spray cans.

Circle No. 109 on Reader Service Card

### Dry Ice Chamber

**Product:** Model TDI-8 environmental test chamber refrigerated by dry ice.

**Manufacturer:** Tenney Engineering, Inc., Union, N.J.

**Features:** Designed specifically for metal treating shops, manufacturers, laboratories, and other organizations which require low cost high and low temperature test facilities. Temperature range is from -100 to +200 F. Reported pull-down is from ambient to -100 F in approximately 60 minutes, while +200 F can be reached in approximately 30 minutes. Interior of test chamber is 8 cu. ft. in size. Dry ice



compartment is removable. Unit plugs into standard 11-volt line and is equipped with swivel casters for mobility. Temperature control is automatic, and indicating or recording instrumentation is available as optional equipment.

Circle No. 110 on Reader Service Card

### Reach-In Freezers

**Product:** New model reach-in freezers in "FW", "F" and "FS" series.

**Manufacturer:** Fogel Refrigerator Co., Philadelphia, Pa.

**Features:** Models are in 45 and 72-cu. ft. sizes, have automatic defrosting, and automatic drain condensate evaporators. Finishes include a choice of white enamel exterior and aluminum interior; stainless steel front, aluminum sides and interior; or all stainless steel. Self-

contained and fully equipped with automatic defrost and automatic drain condensate evaporators.

Circle No. 111 on Reader Service Card

### Two-Pole "Skyhook"

**Product:** Portable hoist, suspending block and tackle from two extendable poles.

**Manufacturer:** B. E. Wallace Products Co., Exton, Pa.

**Features:** "Magic-Pole A-Frame" handles 4000 lbs., has a working height of 10' and weighs 43 lbs. For storage or transportation,

legs fold together and reduce to 6' length. Single guy line may be attached to any convenient support, with a pull up to about 1000 lbs.

Circle No. 112 on Reader Service Card

### Ice Cube Machine

**Product:** No. 864 "Senior Kube King" for producing ice cubes.

**Manufacturer:** La Crosse Cooler Co., La Crosse, Wis.

**Features:** Unit has 1/2-hp air-cooled compressor and a water-cooled condenser. It has a rated capacity of 200 lbs. in 24 hours. Produces

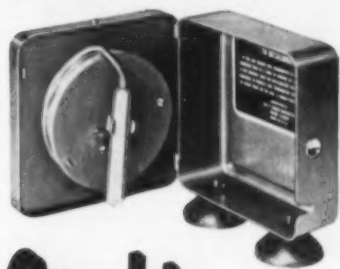
## THE 1955 "Serviceman"



Deluxe 3-scale



Standard



# Still better!

From the day we introduced it, the "Serviceman" proved to be just what its name expressed—exactly what the serviceman needed in a testing thermometer.

But instead of coasting on our laurels, we kept right on making improvements... developed a remarkably perfected instrument that represents an unprecedented value.

The refinement still goes on. In the current model the crystal is now Plexiglas (Lucite)—stronger and far more scratch and stain resistant than the former crystal. The bulb clip (see cut) has been changed so that it is far easier to reel up the tubing in the back of the case and clip the bulb in place. Notice also that the tubing is protected with a spiral spring which prevents sharp bending and resulting damage.

Other recent improvements are the placing of the "Recalibrator" screw on the back of the case for easy access without removing crystal; the bourdon tube made permanently leak proof by a new Marsh process; internal stop protecting against excess temperatures.

Today's "Serviceman" test to 40 below—made in standard type and Deluxe 3-scale type with two added color scales showing Freon-12 and Freon-22 pressures.

**MARSH INSTRUMENT CO.,** Sales affiliate of Jas. P. Marsh Corp. Dept. P, Skokie, Ill.

Marsh Instrument & Valve Co. (Canada) Ltd.  
8407 103rd Street, Edmonton, Alberta

# MARSH Refrigeration Instruments

Circle No. 57 on Reader Service Card

All the famous features retained — many new ones added. Note new handy way of reeling up tubing and effective spiral spring protection of tubing.

Your wholesaler has them



BUY FROM YOUR REFRIGERATION WHOLESALER

**Sell the LEADER  
New  
SUPER-SELL  
Displays by**

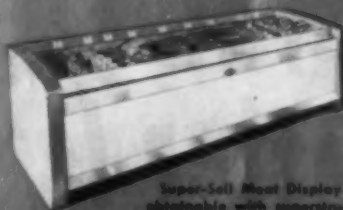


*New Design*



Super-Sell Island Model  
for Frozen Food

*More Capacity*



Super-Sell Meat Display —  
obtainable with superstructure.

*Volume Display*



Super-Sell Vegetable Case. Top  
Display or Double Duty Models.

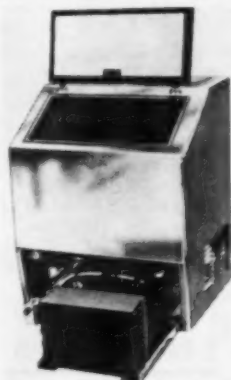
**COLORS TO MATCH STORE DECORATION!**



**Write for Colorful Catalog and Prices  
FEDERAL REFRIGERATOR MFG. CO.**

510 Elizabeth St., Wausau, Wisconsin  
Pacemaker, Sellsville, Wisconsin

52 cubes per freezing. Cubes are automatically dropped as produced into steel storage bin with capacity of 110 lbs. and automatic off-on



control. Condensing unit is on a pull-out panel. Front panel and top are stainless steel.

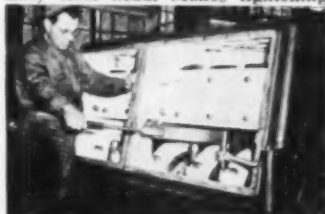
Circle No. 113 on Reader Service Card

**Geared Wrench**

**Product:** "4-to-1" geared-head wrench for heavy assembly and disassembly work.

**Manufacturer:** Bonney Forge & Tool Works, Allentown, Pa.

**Features:** Device is designed for use with ratchets, torque wrenches, sockets, and attachments. Torque is produced through planetary gears. Unit is compact and lightweight, easily used in close quarters. It has a drop-forged, heat-treated, chrome-moly steel head. Makes tightening



of threaded parts to specific torque easy and accurate. Known 4-1 ratio permits its use as a multiplier for torque wrenches. Easily used in shop or field, it eliminates the need for extra manpower.

Circle No. 114 on Reader Service Card

**NAMED DISTRIBUTOR**

Shaw-Gunter Refrigeration & Air Conditioning Co. of Tifton, has been named a distributor for Tift county and southern Georgia by United States Air Conditioning Corp.

*Improved Visibility*



Super-Sell Two Deck All Purpose  
Package Meat or Dairy Case

*Matching Colors*



Super-Sell Triple-Deck  
Dairy Merchandiser.

**ONE LOOK** at the dynamic new **SUPER-SELL** line, and you'll realize why it's the year's "Leadership Line" — in design, beauty, capacity, display appeal, advanced engineering, and performance. It adds up to your most profitable franchise! Write or wire for details.

*You're Sales-Wise  
to Standardize--  
Store-Wide--on  
Federal!*

Circle No. 58 on Reader Service Card

## Your Sales are the payoff



**AUTOMATIC KUBER**

AND LA CROSSE GIVES YOU MORE OF EVERYTHING YOUR CUSTOMERS WANT MOST IN COMMERCIAL REFRIGERATION EQUIPMENT

**SELF CONTAINED BOTTLE COOLER**

**DIRECT DRAW**

**SELF CONTAINED BLUEBIRD**

**DRAINBOARD**

**LA CROSSE**

THE LINE THAT'S PROFIT DESIGNED FOR YOU

**ICE CUBE MAKER 12 TRAY**

**PRE-COOLER**

**LA CROSSE COOLER CO.**

3002 LOSEY BLVD., SO.  
LA CROSSE, WISCONSIN


EXPORT OFFICE:  
80 BROAD ST.  
NEW YORK CITY  
CABLE: EXIMPORT

## ...STOPS CONDENSATION DRIP

# NoDrip

**NoDrip PREVENTS RUST — ANYONE CAN APPLY**

NoDrip plastic coating is easily applied to tanks, containers, suction lines, vats, pipes, walls, ceilings, etc. NoDrip adheres to metal, concrete, brick, plaster. It forms a seamless 100% moisture-proof covering that is effective as soon as dry. Acid, alkali and brine resistant.



### FREE...

Interesting 32-page Handbook shows what NoDrip is and what it does.

SEND COUPON TODAY

SEND NoDrip HANDBOOK

NAME

ADDRESS

CITY  STATE

J. W. MORTELL CO. • 553-M BURCH ST. • KANKAKEE, ILL.  
TECHNICAL COATINGS SINCE 1895

Circle No. 60 on Reader Service Card  
& AIR CONDITIONING • AUGUST, 1955

## Saw DUCT OPENINGS

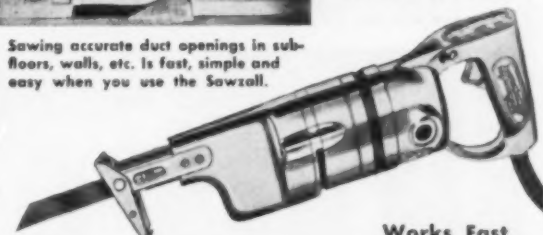
Fast and Easy



with **Milwaukee** Model 414

**SAWZALL**  
A Complete Single Unit  
ELECTRIC HACKSAW

Sawing accurate duct openings in sub-floors, walls, etc. Is fast, simple and easy when you use the Sawzall.



Lightweight... Only 6 3/4 lbs.

**Needs No Starting Hole**

IN WOOD OR COMPARABLE SUBSTANCE

Works Fast  
Saves Money  
Saves Tempers

• 2250 STROKES PER MIN.

SAWZALL puts an end to sawing fatigue. Does those extra hard, tedious, time-consuming sawing jobs... **fast and easy**. Cuts ferrous and non-ferrous metals, including sheet, angles, pipe and tubing. Zips quickly, too, through wood, plaster, embedded nails, composition materials, asphalt tile, etc. Guides easily with one hand and perfect for making intricate cuts in sheet metal or wood for fitting around pipe, ducts or beams.

Super-Powered by full 1/2 hp 115 volt MILWAUKEE heavy-duty Universal type motor with ball and roller bearings at every vital point. Wide assortment of 27 different type blades available to meet every sawing need.

If you are still using old hand hacksawing methods, it's time you tried the Sawzall. You'll be amazed at what it can do in speeding up your jobs... Helps you do better work and makes more money for you.

Now Only \$84.50

Complete with handy steel carrying case and assorted set of Sawzall blades.



See It Demonstrated Today!

... or write for Bulletin SW-6

**MILWAUKEE ELECTRIC TOOL CORP.**

3310 W. State St. • Milwaukee 8, Wis.

Canadian Distributor: MATTHEW MOORE & SONS, Montreal

Circle No. 95 on Reader Service Card



## PENN CONTROLS OPENS NEW BUILDING



**A FORMAL RIBBON CUTTING** ceremony marked the recent opening of a new engineering and research building by Penn Controls, Inc., Goshen, Ind. Participating in the occasion (left to right) were: J. M. Reid, secretary and controller; Ralph S. Penn, president; Albert Penn, chairman of the board; W. F. Few, chief engineer; Ralph Penn, treasurer; and E. B. Maire, vice president in charge of sales. (Above) Porcelainized steel panels with continuous horizontal strips of Thermopane glass distinguish the front view of the new structure which has 18,000 sq. ft. of floor space.



## DAVIS NAMES AGENCIES

Several new agencies have been named by Davis Engineering Corp. of Elizabeth, N.J. to handle the sale of its heat exchanger equipment. Les Tye Co., Fort Worth, Tex., will cover the upper half of Texas, east of New Mexico and Shreveport, La.; Harlan Engineering Co., Lubbock, Tex., extreme western portion of Texas, and southern half of New Mexico; Dravo Corp. (Machinery Div.), Pittsburgh office, will cover western Pennsylvania, northern West Virginia, and eastern Ohio, while Dravo's Cleveland office gets northern Ohio, Indiana (excepting the Lake Michigan and southeast corner counties), and western Kentucky, and the Detroit office handles eastern Michigan,

south of Saginaw Bay. Robert Warnock Co., Birmingham, Ala., will cover Alabama, western Florida and eastern Mississippi.

## RTA NAMES OFFICERS

L. L. Carter of Winston-Salem, N.C. was elected president of the Refrigeration Trade Association of America during the group's third annual convention in Winston-Salem. Other officers elected were: executive secretary, C. W. Phillips, Washington, D.C.; first vice president & advertising manager, R. H. Packett, Silver Spring, Md.; second vice president, J. B. Broughton, Richmond, Va.; secretary, J. D. Detter, Fayetteville, N.C.; treasurer, Leo Wolff, Baltimore, Md.; sergeant at arms, A. C. Huber, Baltimore 2, Md.; chaplain, N. F. Crater, Sr., Winston-Salem, N.C.; general counsel, and C. B. Collins, Washington, D.C.

Directors elected for a 2 year term were: M. G. Horwitz, Silver Spring, Md., S. Pollock, Arlington, Va., G. Brickle, Wilmington, N.C., A. E. Bates, Raleigh, N.C., J. Orner, Folsom, Pa.

Directors elected for a 1 year term were: H. Van Langen, Philadelphia, Pa., G. Nash, Richmond, Va., N. F. Crater, Sr., Winston-Salem, N.C., and R. L. Dillard, Laurel, Md.

## DETROIT DISTRIBUTOR NAMED BY AIRTEMP

The appointment of the Star Steel Supply Co. and The Burton Co. as distributors for Chrysler Airtemp products in the Detroit area has been announced. The two firms will handle Airtemp's entire line of packaged air conditioners, residential air conditioners, gas and oil furnaces. Distribution activities will cover Wayne, Macomb, Oakland, Washtenaw and Genesee counties.

## ACME INDUSTRIES BEGINS NEW PLANT



**MODERN SINGLE-STORY** building which will eventually encompass over half a million square feet of factory and office space has been started at Jackson, Mich., by Acme Industries, Inc. Ground was broken for the first unit in May, with completion scheduled for this fall. The initial structure will add 25% to Acme's production facilities. Plans for the 55-acre location on the outskirts of Jackson include ample parking space and a recreation area for employees. The new plant will embody many advanced architectural features, and production equipment will be selected and installed to take advantage of automation techniques. Location is adjacent to the Jackson Municipal Airport and to a main line of the New York Central Railroad.

## GLUE "SET-UP" . . .

*Continued from page 50*

meant one machine shut down completely.

Another cause for dissatisfaction with this method of providing the ice needed for cooling the glue pots was that the ice man did not arrive until 9 a.m. each morning, whereas the plant always was ready for work at 7:30. Result—more lost production.

Finally, the management of the Red Lion firm decided that the only satisfactory way to solve this problem would be for the company to make its own ice. To accomplish this, the firm invested in two York automatic ice making machines, each capable of producing up to 300 pounds of flaked ice per day, although designed for economical use in establishments requiring as little as 200 pounds per day. The compactness of these units made it possible for them to be located near the point of use, another time saving factor in the company's production operations.

At the Red Lion plant these ice makers are operated 24 hours a day, and the plant's production manager still marvels at how much they have cut down lost time, increased production, and reduced operating costs.

## SALES OFFICES MOVED

Wolverine Tube, Div. of Calumet & Hecla, Inc., has moved its Chicago sales offices to larger quarters. Located at 1580 Sherman Ave., the new offices will become headquarters for E. J. Campbell, Wolverine's midwestern district sales manager and sales representatives E. K. Schutz, M. A. Jackson, R. Julin and W. R. Morrissey.

## OPENS NEW MILL DEPOT AND BRANCH OFFICE

New mill depot facilities and a branch office have been opened in Detroit by Wolverine Tube, Div. of Calumet & Hecla, Inc. The facilities will service Wolverine customers in northern Indiana and Ohio and Michigan's lower peninsula.

## STERLAIRCO NAMES SIX DIRECTORS

Earl A. Darr has been elected chairman and J. E. Reed, G. H. Stenner, C. E. Scott, David E. Feinberg and William Moisselle, directors of Sterlairco, Inc., following incorporation of the new company as a jointly-owned subsidiary of United States Air Conditioning Corporation and the Heat Specialties Division of Sterling Radiator Co., Inc.

Darr, Feinberg and Moisselle are

chairman, president and divisional sales manager, respectively, of United States Air Conditioning Corporation. Reed is chairman of Sterling Radiator; Stenner is president of Sterlairco and also of Sterling's Heat Specialties Division and Scott is vice president and general manager of Sterlairco.

Sterlairco, Inc., with plant and offices in Westfield, Mass., was formed to take over the manufacture, sales and distribution of Usairco and Sterling gas-fired unit heaters.



we turned ice making  
upside down  
to give you

# Kleer Kubes®

What's the biggest problem with ice machines? Most people say "maintenance!" That's why we developed "Inverted Rain," the ideal way to make ice cubes.

"Inverted Rain" forms and harvests KLEER KUBES without mechanical assistance or flotation processes. "Inverted Rain" aerates and filters the water a hundred times an hour—the KLEER KUBE Ice Maker operates efficiently even in the hardest water, with no danger of clogging or deterioration. And because KLEER KUBES move by gravity alone, there are no ice-handling parts to break down. The KLEER KUBE Ice Maker is so simple and service-free that it will last indefinitely!

"Inverted Rain" makes the kind of cubes your customers want—clear, solid, sparkling and really pure—KLEER KUBES!

8 years of research went into the design of the KLEER KUBE Ice Maker. Write today for a free booklet that tells the fascinating story of "Inverted Rain".

## PROLESEL, INC.

4601 Highway 7, Minneapolis 16, Minnesota



solid . . . longer lasting



pure, clear, sparkling





## when **STYLE** makes the sale

Style is all-important when selling women's garments. And style is also a vital consideration in building quiet, efficient air conditioners. The UNARCO ROYAL-AIRE® is a smooth-operating conditioner, that is functionally styled to provide *balanced* air intake, assuring quiet performance.

Wherever people gather the UNARCO ROYAL-AIRE supplies comfort cooling, adding distinction and profit. Salesmen and customers alike are more relaxed, *more receptive* when comfortably cooled.

Plus features of the ROYAL-AIRE include an acces-

sible hermetic compressor that minimizes maintenance, an oversize variflow blower and vertical cooling coil to provide maximum output, and the exclusive UNARCO pump-down control system which guarantees instant response.

For clothing store or drug store, restaurant or office, the ROYAL-AIRE is your *economical* buy! We invite inquiries and shall be happy to send you descriptive literature. Write HEATING & COOLING DIV.

UNION ASBESTOS & RUBBER COMPANY  
332 South Michigan Avenue Chicago 4, Illinois

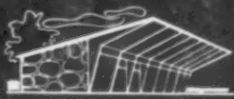


**ROYAL-AIRE** *a distinctive* **AIR CONDITIONER**

Circle No. 62 on Reader Service Card

# **AIR CONDITIONING SECTION**

**COOLING • HEATING • CIRCULATION AND HUMIDITY CONTROL**



**COMMERCIAL**



**INDUSTRIAL**



**INSTITUTIONAL**



**RESIDENTIAL**

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**A Specialist has  
only one love!**



**CLOSET "Spacesaver" showing  
Hi-Boy Furnace with "V" cooling  
coil on top and condensing unit  
outside house.**



**BASEMENT "Spacesaver" with  
Airtemp Hi-Boy Furnace.**

**AIRTEMP specialization in air conditioning makes it easier for you to sell and  
install AIRTEMP matched winter heating and summer cooling**

Air conditioning in its full meaning—summer *plus* winter climate control—has been Airtemp's business for 20 years. This specialization of research, engineering, manufacturing and selling know-how can help you earn more money in two ways:

1. Features that no one else can match—benefits that mean more to your customers because they *do more* for them—make your selling job easier with Airtemp.
2. Winter heating and summer air conditioning units are "made for each other" in every detail by Airtemp. And these precision-matched units not only assure perfectly balanced year 'round air conditioning—they make installation easier and faster, save you precious man-hours on every job.

Make the Airtemp franchise the one that builds greater profits for you. Write for complete details to Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.

**Airtemp**  
DIVISION OF CHRYSLER



HEATING • AIR CONDITIONING FOR HOMES, BUSINESS AND INDUSTRY  
Circle No. 63 on Reader Service Card

# Distributor's Mail Campaign Wins Industry Award

Specially selected prospect lists were used effectively to promote packaged commercial air conditioning sales by dealers



**DIRECT MAIL AWARD** is examined proudly by H. J. Prebensen (seated), president of Temperature Equipment Corp., who directed the campaign, and Roy Heier, vice president. Shown below are some of the eye-catching envelopes in which campaign pieces were mailed.

**W**INNING a "best of industry" award two years in a row with a direct-mail campaign generally means that you've learned how to get results, and good ones, from this important means of merchandising.

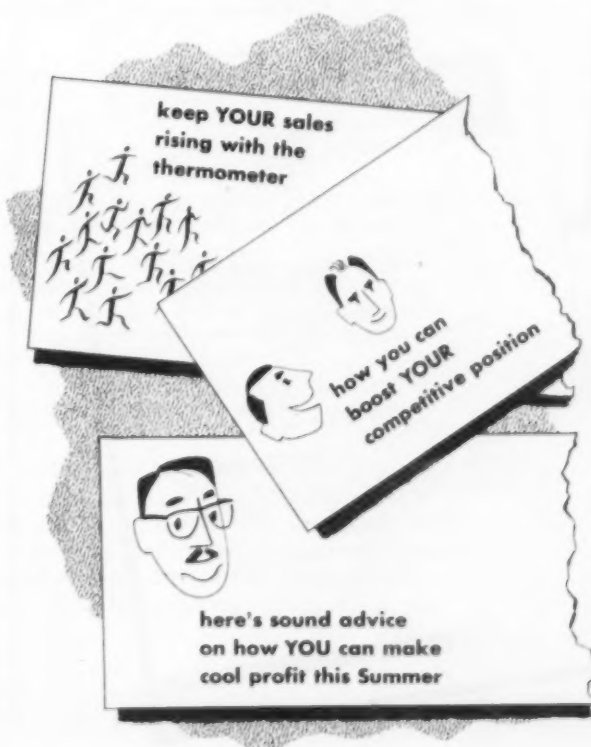
That has been the experience of Temperature Equipment Corp., Chicago Carrier distributor, which has been cited in both 1953 and 1954 in the annual national competition sponsored by the Direct Mail Advertising Association.

The winning campaign entered in the 1954 competition centered around one product—Carrier self-contained commercial-type air conditioning units. Particularly suitable for such commercial installations as stores, restaurants, suites of offices and small industrial applications, packaged units such as this are also well suited to direct mail promotion, in the opinion of H. J. Prebensen, president of the distributorship.

The entire campaign was handled by Sidney Clayton and Associates, Chicago advertising agency, under the direction of Prebensen, and had for its purpose the following four main points:

1. To provide qualified sales leads to stimulate activity among seven selected commercial air conditioning dealers in the greater Chicago area.

2. To provide a test sales promotional program, at reasonable cost to the distributor, which would be aimed, with minimum waste circulation, at the specific



prospects in the specific market areas served by the seven selected dealers.

3. To provide a test sales promotional program which would give strong identification to each dealer individually and which would isolate one dealer from the other as far as returns were concerned, since all of them were, to a great extent, in direct competition with one another.

4. To provide a merchandising test under which the distributor would compile all lists, produce and handle mailings, with the participating dealers being required to supply nothing but a signature sample for use on individual letters in the campaign.

The campaign consisted of three mailings sent bulk, third class, at 1½ cents each, to individually selected prospects under the names of Temperature Equipment Corp.'s seven selected dealers. These were:

Automatic Refrigeration Service, 3210 W. North Ave.; Enterprise Heat & Power, 1901 W. Roosevelt Rd.; Northern Refrigeration & Engineering, 1513 Payne St., Evanston; Utility Engineering, 6142 W. Roosevelt Rd., Oak Park; Refrigeration Maintenance Corp., 321 E. Grand Ave., Monarch Heating & Air Conditioning, 2300 S. Calumet Ave.; and Smitty's Heating & Air Conditioning, 412 W. 107th St.

A mail list consisting of between 1000 and 2000 names was prepared for each of the seven dealers, with all of the names being within a 50-mile radius of Chicago. Compiled from telephone directories, special directories and mailing house lists, they represented 22 different types of retail stores located in the vicinity of each dealer.

Three mailings were made for each dealer organization during nine-week period. Actual dates of the three mailings were April 15, May 6 and May 26. Total of the seven dealer lists was 10,500 names, and the total number of pieces mailed in the three mailings was 31,500.

Each mailing contained different pieces of four-color sales literature prepared by the manufacturer for nationwide distributor-dealer use, a sales letter emphasizing different business advantages provided by air conditioned premises, with the name of the individual participating dealer and the dealer's reproduced signature, plus a business reply card containing the dealer's address. The cards provided space for the prospect's name and address, and also noted the best time for the dealer's representative to call.

One of the letters, for example, was headed "Here's How You Can Put Your Business in a More Competitive Position".

"A lower price on an item sure makes a tremendous selling point," the letter began. "But let's not forget that price competition is not the only form of com-

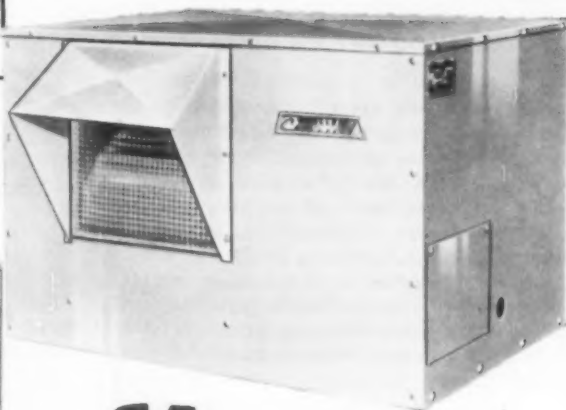
*Continued on page 103*

**SAMPLES OF THE SERIES** of three letters sent out in the award-winning direct-mail campaign conducted for seven selected dealers by Temperature Equipment Corp., Chicago. Each letter showed the individual dealer's name and address at the top of the letterhead, and carried a facsimile of the dealer's signature.



**Type 907**  
air-cooled  
condenser

**Type 908**  
air-cooled  
condensing unit



# Mueller Climatrol

**ends your air-conditioning water worries**

... with two new, remote, air-cooled units

**Type 907** — Converts any water-cooled unit (employing gas-cooled compressor) to air cooling. Available in two-, three-, and five-hp sizes. Weather-proof, rubber-base finish, to permit outdoor installation. Type 907 uses Freon 12 in the 2-hp size; Freon 22 in the 3- and 5-hp sizes. Angle hoods for inlet and outlet openings are available as optional equipment.

Type 907 contains condensing coil, fan motor and centrifugal blower. It employs the compressor in the air-conditioning unit to which it is connected.

**Type 908** — Available in two-, three- and five-hp sizes, complete with heavy-duty compressor, for installation with any remote coil unit. All Type 908 units use 1100 CFM/ton condenser air flow and operate efficiently in ambients up to 110° F — considerably above average. The refrigerant is Freon 12 or 22.

Like the Type 907, the 908 has a weather-proof, rubber-base finish, to permit installing outside. Angle hoods for inlet and outlet openings are available as optional equipment.

Yes, regardless of the water conditions in your area, cooling can be a big, profitable part of your business. With Mueller Climatrol's complete line of equipment, you have a size and type for almost every installation. Get detailed facts and figures on these two new Mueller Climatrol condensing units now. Write Mueller Climatrol, Dept. 145, 2056 W. Oklahoma Ave., Milwaukee 15, Wisconsin.

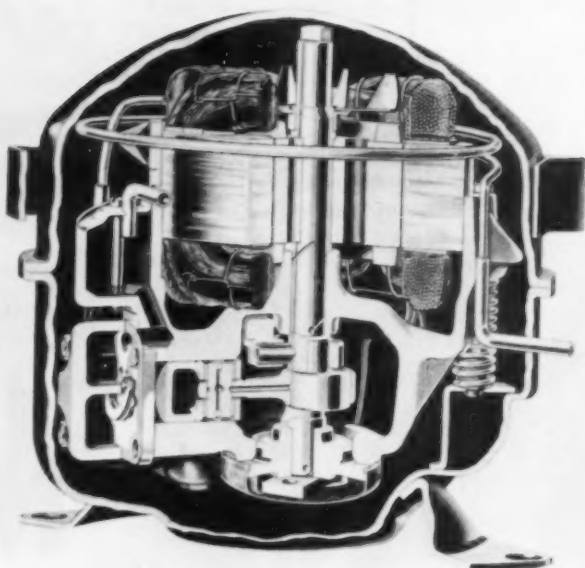
D-109



NEARLY 100 YEARS OF MANUFACTURING QUALITY COMFORT EQUIPMENT



**OIL LEVEL** in this 1/3-hp single cylinder hermetic unit for "Freon-12 or 22" is held at mid-point of cylinder and connecting rod. Centrifugal force in channels in the crankshaft delivers oil to bearings, wrist pin and cylinder walls. (Courtesy of Tecumseh Products Co.)



# LUBRICATION *of Air*

WHAT •

WHERE •

WHY •

WHEN •

HOW •

**PART ONE**

by **G. B. Hamilton**

Research and Technical Dept.  
The Texas Co.

## TEMPERATURE CONTROL

**S**INCE temperature is controlled in all air conditioning equipment except the most rudimentary systems, the air conditioning unit usually will contain either a heating unit or a cooling unit.

The heating unit normally consists of an enclosed space in which to burn a fuel and a means to transfer the heat evolved to the air which it is desired to heat. The heat transfer may occur directly, as in a furnace, or a secondary fluid medium such as water or steam may be employed to transfer heat from the immediate vicinity of its evolution to a remote location. This latter procedure is sometimes more practical and economical than circulating the entire mass of air past the vicinity of the heat evolution.

The number of moving parts in the heating unit which require lubrication is rather small. Certain types of burners have revolving parts requiring grease lubrication of their bearings at certain intervals; pumps for fuel or for transferring a secondary fluid medium, circulating or ventilating fans or shutters, or electric motors powering the various components will require oiling or greasing in accordance with the manufacturer's instructions. None of these services are ordinarily very severe, and general purpose lubricants will ordinarily suffice.

The cooling unit consists essentially of a compressor, condenser, evaporator, refrigerant, tubing and controls. The compressor acts to raise the pressure of refrigerant gas, simultaneously raising its temperature. The condenser is externally cooled by air or water and acts to cool or liquefy the hot compressed refrigerant gas from the compressor.

The cool liquid refrigerant is passed through a pressure reducing or expansion device to the evaporator where it tends to evaporate and expand as a gas. This process requires heat, which is picked up from the air or other fluid medium that surrounds the evaporator. This air or fluid medium is, of course, the material which is described in the cold state, either cold air for use directly in air conditioning or a cold fluid medium such as water, which may be pumped to a remote location to cool air there in an additional heat exchanger.

To complete the refrigeration cycle, low pressure, warm refrigerant gas is picked up from the evaporator by the compressor suction, compressed as before, and reused in the condenser and evaporator on new successive cycles.

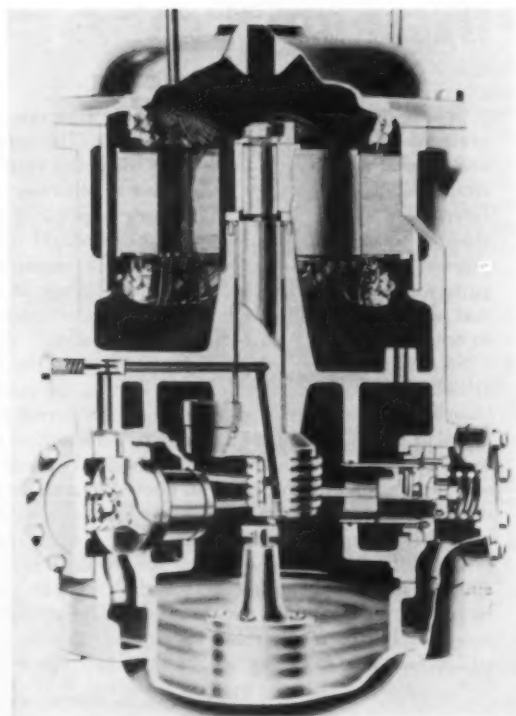
## OPERATION OF THE COMPRESSOR

The compressor functions somewhat as a pump, being designed to transfer the refrigerant gas from a vessel at comparatively low pressure to one at higher pressure. It is a precisely built machine having a number of internal parts and possibly some external parts that require lubrication. These parts place a rather severe duty on lubricants because of close fits, temperatures caused by compression, and the presence of various metals, refrigerants, and often electrical components in contact with the oil. Specialized characteristics are required to meet this duty, and these characteristics are supplied by preparing special lubricating oil products for refrigeration and air conditioning compressor service.

### Reciprocating Type

The reciprocating type of compressor resembles the automotive engine in principle and design, but from one or two up to six, seven or more cylinders may be used in a single machine. Design is not restricted to "in-line" or "V" arrangements as in automobile engines, but may comprise "V", "Y" or radial arrange-

# Conditioning Machinery



ments of the cylinders as desired by the designer. The pistons are fitted into the cylinders with suitable connecting rods, wrist pins, and crankshaft connections. The compressor is dependent upon an outside driving mechanism to which it may be directly or belt connected. The driving mechanism is commonly an electric motor, however reciprocating steam engines or steam turbines are also used.

A large number of refrigerator compressors, particularly the smaller units of fractional and one to three horsepower sizes, do not use piston rings. Instead, the designers plan for close clearances between the pistons and the cylinder walls, and depend upon the lubricating film to maintain the necessary seal. Other designs follow automotive practice of providing compression and/or oil-scraping rings.

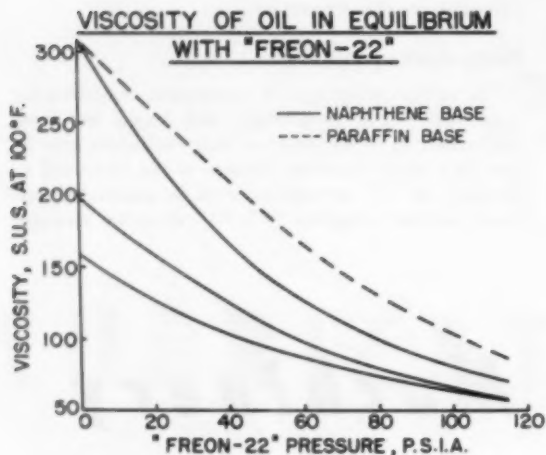
Another marked difference pertinent to the reciprocal refrigeration compressor is the manner in which the gas to be compressed may be drawn into the cylinders. In contrast to taking the gas charge into the top of the cylinder as is customary in the automotive engine or air compressor, the refrigeration

**OIL PUMP** in this sealed radial compressor, available in capacities ranging from 5 through 15 hp, delivers oil past the pressure relief valve to the main and connecting rod bearings. The oil pump is reversible so that direction of rotation is not a problem. (Courtesy of Airtemp Div., Chrysler Corp.)

compressor may draw in the low pressure gaseous refrigerant through the crankcase, using valve mechanisms which are located adjacent to or a part of the piston.

### Rotary Type

The rotary positive displacement type compressor brings about compression through the rotation of an eccentrically driven roller which moves in a gyratory manner in a closed cylinder. The inlet and discharge passages are separated by one or more blades held in contact with the roller surface by springs or oil pressure. Oil also serves to maintain the necessary seal be-



**DATA CURVES** of this type may be used in estimating the viscosity of mixtures in the crankcase of a reciprocating or rotary compressor whose design affords intimate contact of the circulating refrigerant and the lubricating oil. The positions of the various curves will, of course, be different for different refrigerants, different oils, and different temperatures.

tween the surfaces of the roller and housing. Submersion of all the moving parts in oil under pressure protects them adequately against wear and permits manufacture to very close clearances.

While widely used in household refrigerators, the rotary type compressor is probably only used in fractional horsepower air conditioning units. For larger loads, the reciprocating type compressor described above or centrifugal compressor described below is usually favored.

### Centrifugal Type

The centrifugal type compressor resembles a centrifugal pump in design and construction. A rapidly rotating impeller with curved vanes picks up the low pressure gas, rotates it, and discharges it outward by centrifugal action, resulting in increased pressure. By successively channeling the gas through several impellers or stages, increasing pressure up to the limits of the mechanical design and strength of materials can be achieved. High volume of refrigerant can be handled at high and very even pressures.

The machine is free of vibrations and has none of the wear and operating problems attributable to valves, pistons, rings and cylinder walls in reciprocating machines. The centrifugal compressor is thus particularly suited to heavy duty, continuous, large horsepower operations.

### Hermetic Units

While original designs for refrigeration were generally for separately assembled, open type compressors, belt or shaft driven by a separate motor, the recent trend in "small" compressor sizes below 5 hp motor capacity has been toward the sealed or hermetic unit. In these, the electric motor is built into the same casing as the compressor, and the electric motor driving section and the refrigerant compressing section, whether reciprocating or rotary type, are mounted at opposite ends of a single shaft. Both sections are exposed to the refrigerant vapors and heat of compression and are lubricated from the same oil reservoir.

Hermetic units are usually factory-assembled and sealed, and extreme precautions are taken to exclude all foreign materials such as moisture, air, and dirt. The units may be "sealed" by brazing or welding together the parts of the case or "accessible" through bolted, flanged and possibly gasketed components. The sealed type are ordinarily returned to factory service departments for any repairs necessary, whereas the accessible type can undergo certain repairs or replacement of parts in the field, providing all due precautions are taken to exclude air, moisture, etc., as in the original construction of the unit.

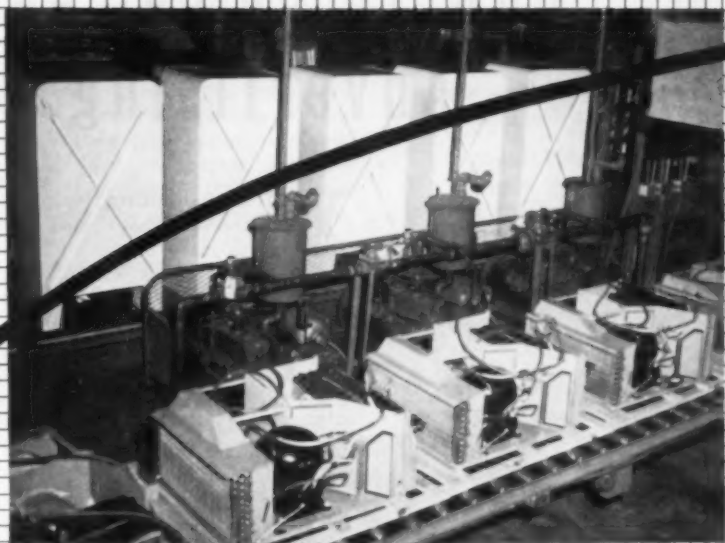
Units of upward of 5 hp capacity usually are separately driven, however the hermetic design is finding occasional application in the intermediate range of 7.5 to 20 horsepower.

### LUBRICATION PRACTICE

Splash, flooded, and forced feed lubrication systems are used in air conditioning compressors. The splash and flooded systems are more adapted to the vertical reciprocating and rotary compressors, whereas the forced feed system is more universally applicable, including horizontal reciprocating and centrifugal compressors. The system used for lubrication of compressor parts will have a decided influence on the grade of oil that should be used. It will therefore, be of interest to note the principles involved in these systems.

Splash lubrication provides distribution of the oil at each revolution of the crank, the level in the crankcase being maintained just high enough to permit the crank to dip in and splash the necessary amount of oil to the cylinder walls and bearings. Continued operation will form a fog of lubricating oil above the main body of oil in the crankcase which will insure adequate lubrication of main, wrist pin, and crank pin bearings, provided these bearings have ample clearance to permit entrance of the oil. The splashing of the dipper and the larger bearing clearances may cause a somewhat higher noise level than is desirable in air conditioning installations. The splashing action may also cause oil

*Continued on page 104*



# KEEP PRODUCTION **HIGH** with Kinney **HIGH** vacuum pumps

Model KDH-130 Single Stage Pump.



The dependability of Kinney High Vacuum Pumps is being demonstrated everyday by their trouble-free service in such installations as this evacuation production line at Amana Refrigeration, Inc. Here these pumps prove their ability to create low absolute pressures quickly and efficiently, and to provide the fast recovery speed necessary for high production rates.

Kinney Model KDH-130 is one of fourteen Vacuum Pumps available for production and service work. This pump delivers ultimate pressures of 10 microns — has a free air displacement of 131 CFM with a 5 HP motor. Kinney also offers a wide range of equipment for on-location servicing of refrigeration and air conditioning units . . . particularly valuable whenever dehydrating, evacuating, and precision charging units . . . also Kinney Vacuum Tight Valves.

District offices in Boston, New York, Philadelphia, Cleveland, Chicago, and Los Angeles are all competently staffed to discuss vacuum with you. Los Angeles office carries complete stock and has full service facilities.

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Please send new Catalog 425 describing complete line of KINNEY VACUUM PUMPS.

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The information and charts presented in these articles have been developed by the Merchandising Department of Chrysler Airtemp as a guide for its residential air conditioning dealers and are published here with their permission.

In general, the following media are most widely used (in the order in which they are mentioned) in local merchandising campaigns: classified telephone directory, newspapers, direct mail, radio, television, and billboards. Besides these major media, there are such minor elements as participation in local home and trade shows, promotions among builders and in

[illegible]

"model home" projects, point-of-installation identification, displays in utility and other public buildings, and publicity at the local level.

You'll want to make use of most of these media, to some extent. But remember this—continual advertising, rather than occasional advertising, is the most important consideration.

Choose, at the very least, two—and preferably three—media with maximum concentration in those of your choice. If 50,000 people (to name a figure) read your advertisement in your local newspaper, remember that continual advertising to those 50,000 people will bring more results in sales than splitting your expenditures too thinly, occasionally advertising in the newspaper and occasionally advertising in a number of other media . . . perhaps in all of them.

Few people buy air conditioning equipment on the "spur of the moment". Instead, most prospects give the matter considerable thought before they buy. Therefore, if you concentrate on a group of consumers (for example, those who read the newspaper and listen to the radio continually), the proportion of that group that ultimately buys air conditioning units could well become your customers. Of course, with larger budgets, your choice of advertising grows, and with a really big budget you could do continuous advertising in all media and really "blanket" your market. Few dealers have that kind of money to spend.

Based on your projected sales, figure your budget and choose media accordingly. Remember that con-

tinuous advertising, with heaviest concentration immediately before and during your peak selling season, will get the best results. Remember also that using big space in newspapers, and nothing else, may not be as effective for you as smaller space in newspapers and activity in other media, provided it is continuous. "Continuous" and "continuity" are golden rules in your advertising activity.

Now let's look at the various media, one by one:

**Classified Telephone Directory.** Besides a bold face listing of your name under your own individual manufacturer's trademark, it's a good idea to carry an advertisement giving a pointed message in the "yellow pages". Play up fast service, budget prices, and complete dependability, for example.

**Newspaper.** This is the "old reliable" in virtually every local market. Find out what each of your local newspapers has to offer. Check circulation figures for distribution within the trading area you want to cover. Find out what percentage of the circulation is home-delivered—that's particularly important in your case. Find out what merchandising aids your local newspapers have to offer, whether they will take special inserts that you can get from your manufacturer. Most of these "plus" features won't be explained unless you ask. Your manufacturer has mats and hints on how you can spend your newspaper advertising dollars most effectively.

*Continued on page 111*

**SAMPLE MEDIA ADVERTISING BUDGET**  
(Illustrative—Percentages—Actual)

DATE	TELEVISION COMMERCE \$60.00/Sec.	NEWSPAPER (Based on 1/2 page per col. line)	RADIO (Based on \$10.00 per one 30-sec. spot)	DIRECT MAIL (Based on \$10.00 per mailing)	DISPLAY AD. (Based on \$10.00 per display)
1st wk.	Trade News Lighting & 1/2 Page	---	---	---	---
2nd wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
3rd wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
4th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
5th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
6th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
7th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
8th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
9th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
10th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
11th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
12th wk.	Trade News Lighting & 1/2 Page	33 Col. Lines	5 Spots	---	---
TOTAL	\$1,800.00	\$1,800.00	\$1,800.00	\$1,800.00	\$1,800.00

**SAMPLE METHOD OF LAYING OUT ADVERTISING BUDGET**  
**FOR TVTIGOL QUARTER**

Annual Projected Sales	-----	\$240,000.00
Annual Advertising Budget (1/3 of sales)	-----	\$80,000.00
Budget for January, February, March (1/3 of Budget)	-----	\$26,666.67

**(JANUARY - FEBRUARY - MARCH)**

<b>Prints &amp; Sales Aids</b>	<b>PERCENT OF</b>	<b>MONTHLY BUDGET</b>	<b>PER MONTH</b>
Total = 18.7% = \$50.00	18.7%	\$50.00	\$50.00
Literature (Handout Placards)	3.3%	\$9.00	\$9.00
Identification (Including Point-of-Installation)	3.3%	\$9.00	\$9.00
Reminiscence Sales Promotion Placards & Sales Aids	3.3%	\$9.00	\$9.00
Training	3.3%	\$9.00	\$9.00

**Door Opener Advertising**

Total = 10.1% = \$27.00	10.1%	\$27.00	\$27.00
Newsprint	3.3%	\$9.00	\$9.00
Radio	3.3%	\$9.00	\$9.00
TV	3.3%	\$9.00	\$9.00
Direct Mail	3.3%	\$9.00	\$9.00
Millboard	3.3%	\$9.00	\$9.00
Telephone Directory	3.3%	\$9.00	\$9.00

**Door Opener**

Total = 12% = \$32.00	12%	\$32.00	\$32.00
Home	3.3%	\$9.00	\$9.00
Builder Promotion	3.3%	\$9.00	\$9.00
Displays	3.3%	\$9.00	\$9.00

**TOTAL**

-----	100%	\$266.00	\$266.00
-------	------	----------	----------

# STORAGE TYPE

## *Air Conditioning*

. . . . . it can help small compressors do BIG JOBS!

by Edward Dowis

**A** SYSTEM which may handle an air conditioning load of two, three, four or more times the rating of the refrigeration condensing unit deserves careful consideration in the planning of a new installation or remodeling of an older one. This is being accomplished successfully by the use of factory built refrigeration storage units which utilize compressors during time they would normally be shut down. Because the condensing unit is a major cost item, a storage cell may substantially reduce the installed cost of a system.

Ice banks, cells, accumulators or similar devices, by whatever name they may be called, have other important advantages for many installations. They include the following:

1. Condensing units can be shut down during periods of maximum power demand, eliminating the demand charge on the monthly power bill for this portion of the service.
2. Small, single phase compressor motors can do work otherwise requiring three phase power and special services.
3. They simplify conditioning of older buildings.
4. They simplify the handling of large and small zones by a single system.
5. Ice banks can serve as boosters for overloaded systems without requiring additional condensing capacity.
6. Precise humidity control is simplified.

All ice bank systems make use of the latent heat of fusion of ice. Heat absorbed by a chilled water coil or air washer spray is carried, with the water, to a chiller where it is absorbed by evaporators or used to melt an ice covering on them. When cooling load

exceeds refrigerating capacity, ice will be depleted. It can be replaced at night or other times when cooling load is low or absent.

Installations which have heavy cooling loads of relatively short duration offer best opportunities for savings in installation cost. Typical among these are churches, lodge and meeting halls, auditoriums, restaurants and theatres. With a conventional system, a church with a maximum cooling load of 30 tons would require a 30 ton condensing unit, even though the load may last only 3 hours. With suitable storage equipment, the load could be handled by a 15 ton unit running 6 hours, a 7½ ton unit running 12 hours or a 5 ton unit running 18 hours.

Office buildings, residences, stores and other buildings with fairly constant daily loads may profitably select storage cells to utilize compressor capacity during night hours. The stored cooling effect can be used at any time, and as fast as the load requires.

The minimum compressor size which will handle a given load, with a storage system, is simply determined by dividing the estimated ton-hour load by the permissible running time. It is customary to allow 10% additional as a safety factor. Compressor size can be specified in horsepower by allowing .75 tons per horsepower, which is about right for ice building where an evaporative condenser is used. The horsepower formula is:

$$\text{Horsepower} = \frac{\text{total ton-hours}}{.75 \times \text{running time}}$$

As an example, take an industrial cafeteria which has a load of 25 tons for two hours, plus a pull down load of 15 tons for one hour. Here's how to find how to find

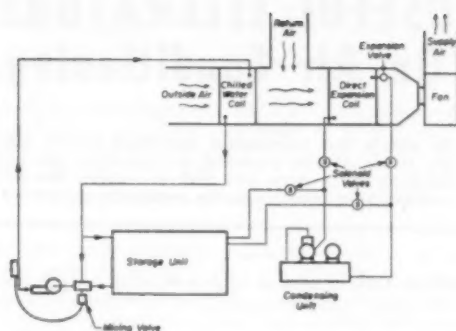


FIG. 1—Typical storage type air conditioning system. Such a system, combining a 5-hp, 3.75-ton condensing unit with a 60.25 ton-hour storage unit can handle a 25-ton peak load.

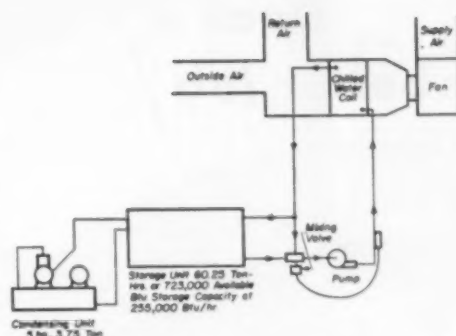


FIG. 2—Piping layout for a system using a storage unit in conjunction with a booster coil. Solenoids can valve the condensing unit to operate either the cooling coil or the storage cells.

the minimum compressor horsepower, allowing a 20 hour per day running time:

$$\begin{array}{rcl} 2 \text{ hrs.} \times 25 \text{ tons} & = & 50 \text{ ton-hours.} \\ 1 \text{ hr.} \times 15 \text{ tons} & = & 15 \text{ ton-hours.} \\ \hline & & 65 \end{array}$$

$$\begin{array}{rcl} \text{Safety factor } 10\% & & 6.5 \\ \text{TOTAL} & & 71.5 \text{ ton-hours.} \end{array}$$

$$\text{Horsepower} = \frac{71.5}{.75 \times 20} = \frac{71.5}{15} = 4.76$$

Any condensing unit of 4.76 hp or over, with proper temperature characteristics, could be used. A 5-hp unit would be a logical selection. It will be noted that at least a 25-hp unit would be required with a conventional system. It is apparent that sizes of other components of the refrigerating system will be determined by that of the compressor. These include condenser, motor, piping and power service.

Storage capacity required will be the total ton-hour load, less whatever part the compressor can handle directly. This will be the tons capacity of the condensing unit times the number of hours it operates while cooling units are in operation.

In the previous example, if a 5-hp compressor is selected for the industrial cafeteria, nominal tonnage will be  $5 \times .75$  or 3.75 tons. If it runs during the three hour cooling period, it will handle 3 hours  $\times$  3.75 tons or 11.25 ton hours. This can be deducted from the 71.5 total ton-hour load, making net storage capacity required:

$$71.5 - 11.25 = 60.25 \text{ ton hours.}$$

A specific selection can be made from specifications in manufacturers' catalog. A unit or combination with total storage capacity of at least 60.25 ton-hours or the equivalent is available Btu ( $12,000 \times 60.25 = 723,000$ ) should be selected. The discharge rate should

*Continued on page 114*

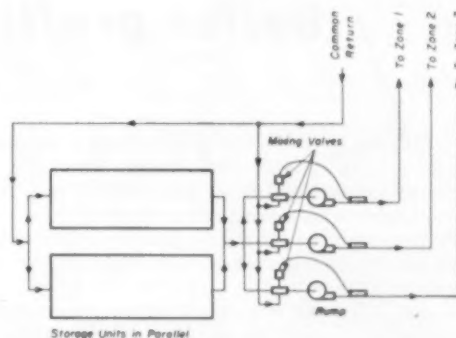


FIG. 3—Typical layout for a three-zone system using two storage units in parallel. Actually, any number of storage units may be connected in similar manner to achieve any desired capacity.

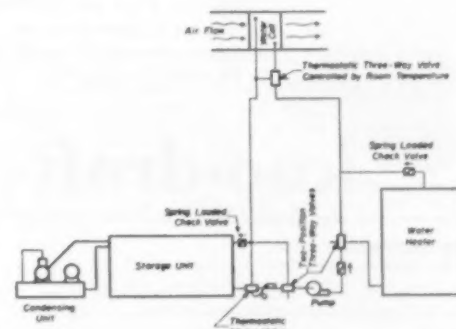


FIG. 4—Storage unit connected to a hot-water system to provide year-round conditioning. Changeover from cooling to heating is by two three-way valves positioned either manually or thermostatically.



**Does a  
better job**



**nets a  
better profit**

**E**very air conditioning installation is judged on performance—how it feels to the customer. That's why the method of air distribution is so important, and why Kno-Draft Air Diffusers are making grilles obsolete.

With Kno-Draft Type ABC Air Diffusers, for example, you can assure your customers ideal *draftless* comfort, plus top efficiency and economy.

Type ABC Kno-Draft is especially designed for commercial installations. It works efficiently even where ceilings are hung or mounting heights low. An exclusive snap-lock assembly cuts your installation time. A special neck-mounted gasket prevents stray leakage. A sleeve-type damper lets you adjust for exact air volume *after* installation.

These features, plus Kno-Draft's handsome appearance, enable you to do a better job on every installation, net a better profit. Write today for Bulletin K-34 and full information. Connor Engineering Corporation, Dept. C-85, Danbury, Connecticut.

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Circle No. 66 on Reader Service Card

## USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

**HELPFUL TIPS** on ways to apply economical and efficient air conditioning to more than a score of different types of buildings, ranging from homes to manufacturing plants and retail establishments, are outlined in "Guideposts to Better Air Conditioning Installations" made available by the Du Pont company. This 36-page booklet is a compilation of semi-technical articles by outstanding engineering consultants. A separate section contains suggestions on the most practical location of air conditioning equipment from a building design standpoint.

Circle No. 171 on Reader Service Card

**CONTROL CENTERS** for year-round air conditioning units are described in Bulletin 3054 of Penn Controls, Inc. In 12 pages, the publication also deals with typical wiring hook-ups for single-stage and two-stage systems.

Circle No. 172 on Reader Service Card

**THREE BOOKLETS** with electrical information useful in refrigeration and air conditioning have been newly issued by Pyramid Instrument Corp. Their descriptive titles are: "Know Your UL Wiring Standards for Room Units," "Trouble Shooting Electric Motors With Split-Core Volt Ammeter," and "14 Ways a Volt-Ammeter Can Boost Your Service Profits."

Circle No. 173 on Reader Service Card

**DUCT HANGARS** made of plate-type nylon, and their application with "Tuff-Bond" adhesive, are described in a 4-page folder issued by Goodloe E. Moore, Inc. Catalog sheets are also available with further technical data on these products.

Circle No. 174 on Reader Service Card

**A COMPARATIVE STUDY** of air filtration costs, taking into consideration the factors of replacement and maintenance as applied to various types, is embodied in a 4-page folder issued by Owens-Corning Fiberglas Corp. One of the highlights is evidence that 80 to 90% of dirt found in a 2" filter, is found within the first inch of its depth, indicating there is economy in using two filters of 1" each, rather than a single 2" thickness.

Circle No. 175 on Reader Service Card

**VERTICAL SERVICE PUMPS** for liquid transfer, including cooling tower use, are described in a 16-page bulletin of Peerless Pump Div., Food Machinery & Chemical Corp. Applications of these pumps are listed with design recommendations for optimum performance, and cross-sectional drawings show operating mechanism.

Circle No. 176 on Reader Service Card

**ELECTRONIC CONTROLS** of heating, ventilating, and air conditioning are the subject of a reference guide published by Minneapolis-Honeywell Regulator Co. The booklet discusses various thermostat types, insertion units for measurements in ducts or liquid lines, outdoor sensing elements, and control panels, and includes 17 typical system diagrams.

Circle No. 177 on Reader Service Card

**AIR CONDITIONING UNITS** for zone-type applications are described in a 12-page catalog of Bush Mfg. Co. Specifications, selection and ordering information on complete "MZ" units as well as their components are included.

Circle No. 178 on Reader Service Card

**CLEANING EQUIPMENT** for use in air conditioning and related systems is described in a folder of Premier Co., and includes a vacuum cleaner for hot jobs, as well as various brushes and other attachments.

Circle No. 179 on Reader Service Card

**PERFORMANCE RATINGS** cross-section drawings of close-coupled and side-suction pumps are provided in a 2-page catalog insert (Bulletin 135-SJ) of Aurora Pump Co. These units are suitable for air conditioning units, cooling towers, and other applications.

Circle No. 180 on Reader Service Card

**AN EXTENSIVE LINE** of residential and other air conditioning units is described in bulletins R-53-Z, S-54, P-52, O-52, and supplementary leaflets of Recoy Products Co. Included are blower and cooling sections, freeze proof water coolers, diffusers, coils, and water or brine cooling units.

Circle No. 181 on Reader Service Card

**SIGNIFICANT DETAILS** relating to "Fedair" remote-type heating and cooling units are given in a 4-page bulletin (HC-C2) of Fedders-Quigan Corp. The units are designed for multiple room installations using hot and cold water. Capacities and dimensional data are included.

Circle No. 182 on Reader Service Card

(Turn to page 69 for more Useful Literature)

## You Cannot Beat Turbine-Type APCOS for Small Capacity, High Head Duties

Capacities to 150 G.P.M.



Heads to 600 Ft.

APCO Single Stage Turbine-Type Pump

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AURORA CENTRIFUGAL PUMPS

are available in many types and sizes—all noted for their streamline coordination between impellers and shells.

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**AURORA CENTRIFUGAL PUMPS**

are available in many types and sizes—all noted for their streamline coordination between impellers and shells.

We Invite Your Special Pump Problems

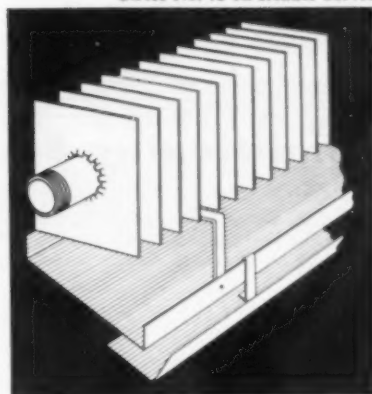
DISTRIBUTORS IN PRINCIPAL CITIES

**AURORA® PUMP DIVISION**  
THE NEW YORK AIR BRAKE COMPANY

21 LOUCKS STREET • AURORA • ILLINOIS

Circle No. 73 on Reader Service Card  
& AIR CONDITIONING • AUGUST, 1955

Circle No. 72 on Reader Service Card



## FRICK Square-finned pipe

Is ideal for cold storages, freezers, food processing and meat packing plants, etc. Manufactured from 2" dia. F.W. steel pipe and 7" square 14-gauge fins, Frick finned pipe gives maximum heat transfer per dollar invested. Each fin is bonded to the pipe under tons of hydraulic pressure. All assemblies are hot-dip galvanized.

These new Frick finned coils require only one-quarter of the space needed for bare pipe having the same surface. This new finned pipe is available in lengths of 5', 6'8", 10' and 20'—and with fin spacings of 1" and 1½"—to fit every application.

See your nearest Frick Branch or Distributor for complete details, or write for Bulletin 158.



DEPENDABLE REFRIGERATION SINCE 1862  
**Frick Co.**  
WAYNESBORO, PENNA. U.S.A.

## NOW... an improved spray nozzle

**ASPIR-JET**



Manufacturers of atmospheric cooling towers and air conditioning contractors are switching to Aspir-Jet nozzles. Reason: tremendously increased water break-up and distribution, and longer nozzle life.

These nozzles are designed so that air is mixed with water as the water leaves the nozzle. Aspir-Jets work efficiently on pressures as low as one-half pound. Injection moulded of butyrate plastic they do not corrode or erode. Made in three sizes—3, 5 and 7 gallon per minute capacities.

- Available through Refrigeration and Air Conditioning wholesalers.

Manufacturers & Refrigeration Wholesalers:  
if you are not now using or stocking this astounding new product, wire or write

## THERMAL AGENCY

National Sales Agents

THERMAL BLDG. • 1515 DALLAS • HOUSTON, TEXAS

Circle No. 68 on Reader Service Card

# WHAT'S NEW

## in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your request will be forwarded directly to the companies concerned.

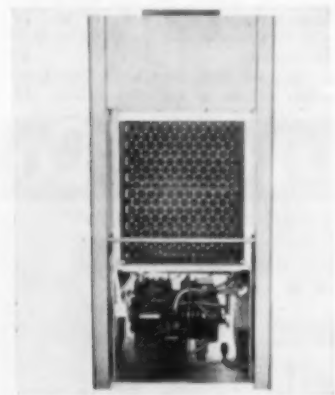
(For more New Products turn to page 72)

### Air Conditioning Units

**Product:** New line of air conditioning units.

**Manufacturer:** Penguin Corp., Livonia, Mich.

**Features:** Line comprises both residential-commercial and room type air conditioners. Model 300-W has 3 hp compressor, delivers from 3 to 3¾ tons of refrigeration. Larger



model 500-CW is equipped with 5 hp unit, and has capacity of from 5 to 5¾ tons. Both units have heavy steel cabinets, insulated and with baked enamel, hammer finish. Models 75-AB and 75-AH room air conditioners have circulation capacity of 300 cfm, employ ¾ hp condensing unit. Model 75-AH is mounted on casters for easy portability. Model 75-AB has cooler on top for storage of ice, drink mixes, etc.

Circle No. 121 on Reader Service Card

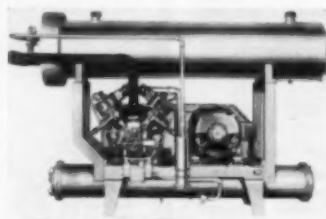
### Liquid Chillers

**Product:** Packaged liquid chillers for air conditioning or process cooling; consoles also in line.

**Manufacturer:** Curtis Refrigerating Machine Div., Curtis Mfg. Co., St. Louis, Mo.

**Features:** New line of chillers range from 7½ to 100 tons, and have matched components for fast, economical installation. Include multi-cylinder compressor, water-

cooled shell-tube condenser, chiller, controls, electrical wiring, refrigerant piping, and expansion valves. Require only setting and connec-



tion of water and electrical outlets. Consoles also are available in a full range of sizes for year-round use.

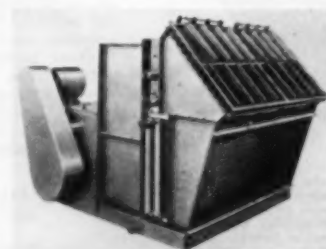
Circle No. 122 on Reader Service Card

### Cabinet Air Coolers

**Product:** New line of central station, cabinet-type conditioning units for industrial and commercial applications.

**Manufacturer:** American Blower Corp., Detroit, Mich.

**Features:** Compactness, simple installation, design flexibility, and a capacity range from 600 to 48,000 cfm. are stressed. Three basic types include air conditioning units, sprayed coil units, and multi-zone conditioner units (illustrated). First two named are available as either horizontal or vertical arrangements but



with horizontal air flow. Third type is in single arrangement but for either horizontal or vertical air flow. Cooling and dehumidifying may be done in all types with chilled water, direct expansion refrigerant, or brines. Heating may be with steam

or hot water. Humidification can be had with either target-type water nozzles or sprayed coils. Controls may be either manual or automatic. All units have zinc-coated steel drain pans, wheels, housing and casing parts. Fans are driven by low-speed motors with rubber mountings. Insulation is Fiberglas, except for foam plastic used on drain pan.

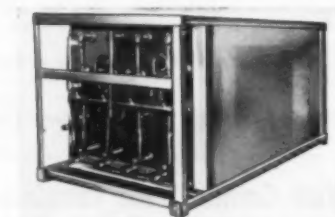
Circle No. 123 on Reader Service Card

### Ice-Type Conditioner

**Product:** Ice bank units for storage of reserve cooling capacity in conjunction with mechanical air conditioning.

**Manufacturer:** King Zeero Co., Chicago, Ill.

**Features:** Round-the-clock total cooling capacity may be stored in ice bank unit for use in single eight-hour period or other occasions of peak requirements. Company has 94 sizes of equipment ranging from 72,000 to 4,320,000 Btu in storage. Equipment is especially recommended for churches, restaurants, auditoriums, and other places where it



can take care of peak loads by a temporary discharge of reserve cooling far in excess of rate at which compressor is producing. Ice thickness in chilled water is automatically controlled to eliminate freeze-ups. Units are available with or without compressor sections.

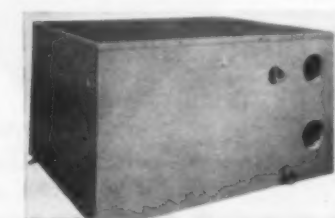
Circle No. 124 on Reader Service Card

### Year-Round Unit

**Product:** Models 55M and 80M, "Split-Aire" conditioner.

**Manufacturer:** Penn Boiler & Burner Mfg. Corp., Lancaster, Pa.

**Features:** Unit is designed for central location near or above ceiling level, for operation with hot and cold water. Forced air is distributed from it through 4" ducts. Model



ing level, for operation with hot and cold water. Forced air is distributed from it through 4" ducts. Model

55M has six ducts, heating capacity of 55,000 Btuh with 200 F water, and cooling capacity of 20,000 Btuh with 45 F water. Model 80 M has eight ducts, heating capacity of 80,000 Btuh, and cooling capacity of 30,000 Btuh. Both use direct drive blower and filters.

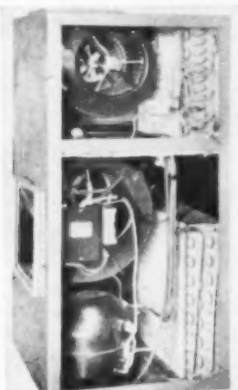
Circle No. 125 on Reader Service Card

#### Home Conditioners

**Product:** Waterless residential conditioners in 2, 3, and 5-ton sizes.

**Manufacturer:** Lingle Refrigerator Co., Kansas City, Mo.

**Features:** Packaged units are in upright, split, and horizontal models.



and are equipped with Tecumseh compressors, Delco motors, Viking fans, and General controls. Installation utilizes existing ducts, with addition of one hot air exhaust. Hermetically sealed units are designed for high capacity.

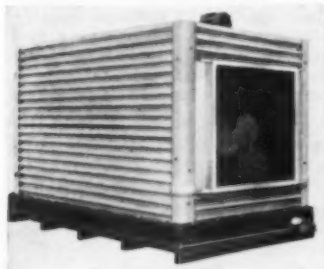
Circle No. 126 on Reader Service Card

#### Cooling Towers

**Product:** "Wood Aquatowers" for recooling water.

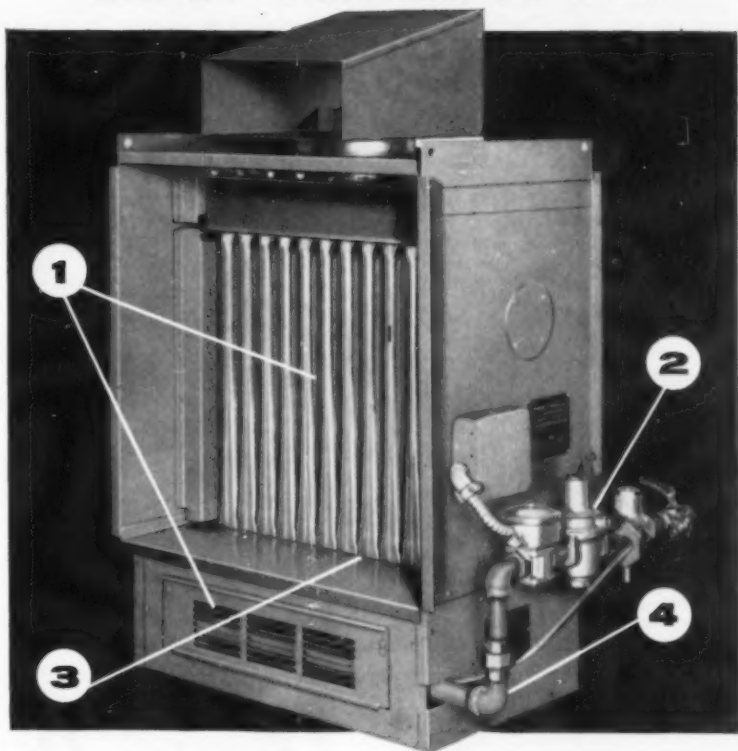
**Manufacturer:** Marley Co., Kansas City, Mo.

**Features:** Capacities range from five to 50 tons. Line is built especially for cases where corrosion is a



major problem. All-wood construction in models to 15 tons, and combination of wood and corrugated asbestos board construction on larger models, are impervious to corrosive

## Only this gas-fired duct furnace...



### offers all these installation and operating advantages

**1. Full protection against rust and corrosion.** Stainless steel heat exchanger and burners prolong service life, lower maintenance costs, extend application possibilities.

**2. Easy access.** Entire control assembly is mounted on side of unit, is easy to get at for service regardless of where furnace is located.

**3. Fast, uniform heat transfer.** Seam-welded, gas-tight exchanger features individually-fired tubes.

**4. Non-fouling burners.** Burner ports have four times more area than conventional drilled ports . . . knife-like

edges to deter lodging of dirt or scale . . . are, in effect, self-cleaning.

#### PLUS

✓ Lightweight and small bulk to minimize installation and handling costs.

✓ A choice of five sizes — 88,000 to 213,000 Btu/hr input, all AGA-approved — to meet applications including: central heating . . . booster units . . . air conditioning . . . industrial and agricultural drying, processing and ventilating.

For details, ask the representative listed in the classified phone book for Bulletin 855, or write—Modine Mfg. Co., 1584 DeKoven Ave., Racine, Wis.

# Modine

**GAS-FIRED STAINLESS STEEL DUCT FURNACES**

D-1277

Circle No. 69 on Reader Service Card



air or water. Units have advantages of forced draft, cross-flow design, with vertical air discharge; may be located close to walls except on air intake side. Life-time redwood filling. Gravity water flow from open distribution basin.

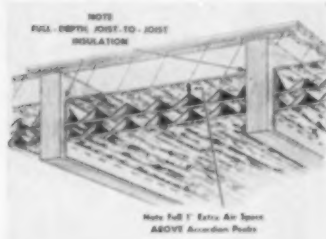
Circle No. 127 on Reader Service Card

#### New Insulation

**Product:** "Infra Type 6PS" aluminum and fiber insulation for walls and ceilings.

**Manufacturer:** Infra Insulation, Inc., New York, N.Y.

**Features:** Each section includes three aluminum sheets, separated by two accordion fiber sheets, to provide



1" extra air space within total 3" thickness. Arrangement provides barrier against heat flow by conduction, convection, and radiation. Ma-

terial is made for 16 and 24" centers, and is packaged in small cartons for 250 sq. ft. of coverage.

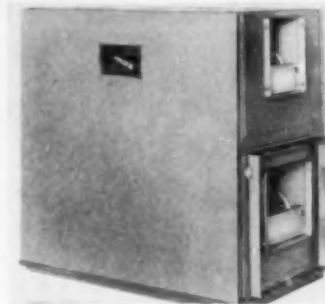
Circle No. 128 on Reader Service Card

#### Residential Unit

**Product:** "SAC-3" air conditioner, 1 1/2-ton size.

**Manufacturer:** Sunwarm, Inc., Kingsport, Tenn.

**Features:** Condensate from cooling coil flows downward onto con-



denser, increasing capacity an estimated 12 to 15% on extremely hot and humid days. Inlet and outlet locations for evaporator air are variable, making possible five different combinations, thereby usually reducing amount of sheet metal work

required. Unit is air-cooled and uses Freon-12. Also available is a selector which divides a house into two separate zones, shifting cool air wherever it is needed most. Uses no water.

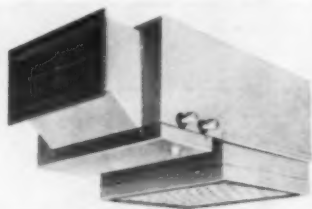
Circle No. 129 on Reader Service Card

#### Remote Conditioner

**Product:** Model RE "Recold" remote room air conditioner designed for use with either direct expansion or chilled and hot water systems.

**Manufacturer:** Refrigeration Engineering, Inc., Los Angeles, Calif.

**Features:** Available in three sizes, each unit is individually con-



trolled for personalized comfort. Easy to install in new or existing buildings, as it fits into unused area, such as above closet shelves. Requires no ducts, as outlet can be fit-

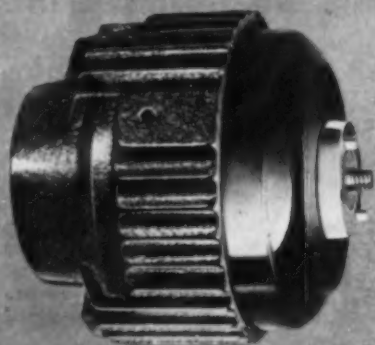
## Easier Replacement

with **Redmond TYPE AM**

### SINGLE BEARING MONOMOTORS

HERE is a Redmond MonoMotor that effectively solves your motor replacement problems. Designed primarily for use in refrigeration, these single bearing motors are also suitable for a wide range of applications in air conditioning and ventilating equipment. Equipped with threaded holes for either side or back mounting, this Redmond MonoMotor is interchangeable with any single bearing motor of a similar size and capacity.

These 4-pole, lifetime lubricated motors are available in sizes up to 9-watt output. Outstanding features include an extra large lifetime sealed oil reservoir that provides pressure lubrication. Rugged cast iron case protects the motor and insures long and dependable service. Let Redmond MonoMotors simplify your replacement problems.



### REDMOND DISTRIBUTORS, INC.

OWOSSO, MICHIGAN

Circle No. 70 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION

ted between studs. Unit is furnished completely enclosed, including electrical connection box. Plug-in motor and fan assembly simplifies installation and service.  
Circle No. 130 on Reader Service Card

#### Air Conditioners

**Product:** "Master-matic" air conditioning units in 10 and 15-ton sizes for commercial applications.

**Manufacturer:** Frigidaire Div., General Motors Corp., Dayton, Ohio.

**Features:** Both sizes use twin cooling system for separate or simultaneous operation. Blower section at top can be adjusted for discharge to front, back, or upward, to simplify tying into duct work. If



remote installation is desired, compressor and cooling sections can be separated. Compressors are sealed reciprocating type with direct drives, and are oiled for life. Steam heating coils are also available. Dimensions of both models are: 93 $\frac{5}{8}$ " high, 67" wide, 29 $\frac{1}{2}$ " deep.  
Circle No. 131 on Reader Service Card

#### Cooler Units

**Product:** "Zone Air" room-size coolers for remote-type installations.

**Manufacturer:** A. H. Witt Co., Los Angeles, Calif.

**Features:** Silent operation is stressed. Most models have two



blower wheels driven by separate motors. Units may be used with direct expansion, combination heating-cooling with water, or direct expansion and steam. Flat continuous fins are of aluminum. Double drip pan provides insulating air space, with bottom of upper aluminum pan

insulated against formation of condensate on outside. Fourteen sizes range from 300 to 1200 cfm.

Circle No. 132 on Reader Service Card

#### Unit Heater

**Product:** "DNP" gas-fired, suspended-type unit heater.

**Manufacturer:** Day & Night Div., Carrier Corp., Monrovia, Calif.

**Features:** Delayed action fan allows element to heat before supplying air. Free air space around heat exchanger and rubber mountings for fan provide quiet operation. Unit is

installed on built-in hangers, and is designed for commercial applications. Eight sizes are available, ranging from 50,000 to 225,000 Btu input ratings.

Circle No. 133 on Reader Service Card

#### Building Insulation

**Product:** Fiberglas with aluminum foil on both sides.

**Manufacturer:** Owens-Corning Fiberglas Corp., Toledo, Ohio.

**Features:** Materials have complementary insulating properties. Foil on outer surface, perforated to avoid moisture buildup, reflects heat



When the  
condenser tubes  
are loaded with scale  
and the head pressure  
is way up there—  
the smart service man  
prescribes a dose of

## ANCO Condenser Cleaner

This exclusive dry formula dissolved in the sump removes scale and rust and restores normal operating efficiency in a few hours without harm to any metal surfaces.



Keep Cooling Towers Clean with

ANCO ALGAECIDE



Keep Scale from Forming with

ANCO WATER TREATMENT

See Your Wholesaler or Write Direct



## Anderson Chemical Company

BOX 1424 • MACON, GEORGIA

rays. Interior foil provides vapor barrier. Product is available in batts and blankets, with the usual flanges for nailing or stapling in widths of 15, 19, and 23".

Circle No. 134 on Reader Service Card

#### Room Conditioners

**Product:** New series "Cool-A-Matic" room air conditioners.

**Manufacturer:** Automatic Firing Corp., St. Louis, Mo.

**Features:** Limed oak finish for decorative significance is emphasized in this series. Models are in  $\frac{3}{4}$ , 1, and  $1\frac{1}{2}$ -ton sizes, rated at 9,000,

12,000 and 18,000 Btu capacities, using two-cylinder Copeland compressor and oversized coils. Moisture is dissipated to outside air. Motor is two-speed. Centrifugal blower is dynamically balanced. A five-year guarantee applied to refrigerant cooling circuit.

Circle No. 135 on Reader Service Card

#### Plug-In Cord Set

**Product:** New-type flexible cord set for room air conditioners.

**Manufacturer:** General Electric Co., Bridgeport, Conn.

**Features:** Using thermoplastic

insulating material, cord is similar to conventional rip-cord type but has its green grounding conductor nested between the other two conductors. It is also available without the



grounding line. Greater flexibility of materials permits sharper bending. Smooth surface makes for easy cleaning. Wide range of color options adds decorative appeal. Units are available in 14 and 16 AWG.

Circle No. 136 on Reader Service Card

## Your No.1 DEMAND...

## the CONDENSER must be

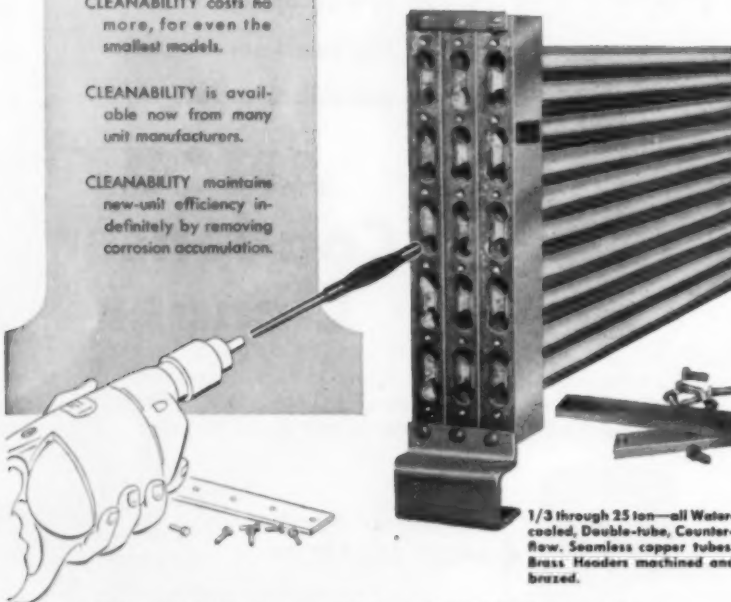
# CLEANABLE

*Because...*

CLEANABILITY costs no more, for even the smallest models.

CLEANABILITY is available now from many unit manufacturers.

CLEANABILITY maintains new-unit efficiency indefinitely by removing corrosion accumulation.



Why not insist that your next unit have a CLEANABLE water-cooled condenser? Especially since leading manufacturers, one after the other, are recognizing the "must" advantages of accessibility to cleaning and are equipping their units accordingly. Initial purchase cost is no higher, and longer life and more economical performance are guaranteed. The CLEANABLE feature enables you to recover new-unit efficiency and thus maintain 100% economical operation indefinitely. Water-tubes are accessible from both ends on all size models.

Wholesalers in Principal Cities  
Write for descriptive literature.

**HM**  
*Halstead & Mitchell*

OFFICES: Bessemer Building, Pittsburgh 22, Pa.

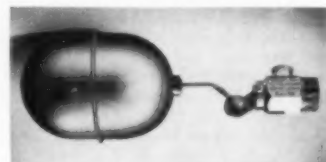
Circle No. 67 on Reader Service Card

#### Water Shut-Off

**Product:** "Reito Jiffy Action" valve for water intake on air conditioning units and humidifiers.

**Manufacturer:** Reitman Mfg. Co., Oakland, Calif.

**Features:** Valve operates automatically at pre-selected water level. Float is set at desired level by easy bending of spring tension stud. Mod-



el 202 is for standard  $\frac{1}{2}$ " thread connection. Model 303 allows connection to  $\frac{1}{4}$ ",  $\frac{1}{2}$ " or ordinary garden hose. All parts are of brass or stainless steel, requiring no maintenance.

Circle No. 137 on Reader Service Card

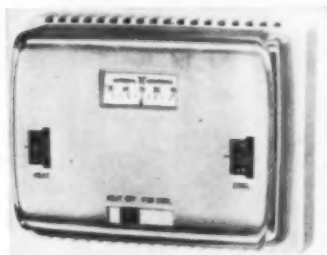
#### Home Thermostat

**Product:** Model T-231 thermostat for year-round residential air conditioners.

**Manufacturer:** General Controls Co., Glendale, Calif.

**Features:** Single selector switch simplifies summer-winter operation. Separate roll-type temperature dials for heating and cooling are easy to read. Dials are located on face of thermostat, which extends less than 2" from wall. Newly designed bi-metal thermometer permits reading of room temperature at a glance. Fingertip selector switch has "off",

"heat", "fan", and "cool" positions, with intermittent and continuous fan positions also available. Mercury



tube switches eliminate problems caused by dirty contacts. Both heat and cold anticipation are standard. Circle No. 138 on Reader Service Card

#### Hot-Cold Wall Unit

**Product:** "Mono-Aqua" room unit for remote hot-cold systems.

**Manufacturer:** A. Brown Products Corp., Forest Hills, N.Y.

**Features:** Unit works on any one-pipe forced water system. Compact size, 19" x 14", permits installation between studs with only 2" projecting beyond wall finish. Three-



row coil increases dehumidification capacity and is tilted to prevent throwing water through louvers when first turned on. Interior surfaces of cabinet are insulated to prevent condensate dripping. Rheostat knob permits adjustment without removing cover.

Circle No. 139 on Reader Service Card

#### Pipe Covering

**Product:** "Asbestos" pipe jacketing made of aluminum foil laminated onto vapor-proofed asbestos cloth.

**Manufacturer:** U.S. Rubber Co., New York, N.Y.

**Features:** Material is resistant to fire, acid and water; requires no

painting, and will not absorb odors. It is recommended for heating, piping, refrigeration, and air conditioning systems. A square yard weighs 12 ounces, compared to 22-36 for asbestos jacketing cloths in general industrial use.

Circle No. 140 on Reader Service Card

#### No-Odor Filters

**Product:** Filters with activated charcoal combined with fiber glass to remove smog irritants and odors, as well as dust and pollen.

**Manufacturer:** Philco Corp., Philadelphia, Pa.

**Features:** "Odor-Stop" filters are available as original equipment or as replacement units for 1955 Philco air conditioners. Also, they may be used as conversion units on earlier models. All filters are 1/2" thick.

Circle No. 141 on Reader Service Card

#### Return Air Grilles

**Product:** "Airfoil" grilles for return air ducts.

**Manufacturer:** Titus Mfg. Corp., Waterloo, Iowa.

**Features:** "One-piece" assembly for any size opening makes practice

## Easy way to control noise and vibration



• It's easy to avoid complaints due to annoying vibration and noise. When installing air conditioning units, simply set them on ISOMODE PADS. Just cut what you need for the weight of the unit, place the Pads under each corner and that's it. ISOMODE PADS swallow up vibration, muffle noise on any type floor.

Made of Neoprene, these cross-ribbed, 5/16"-thick pads cut with ordinary shears, need no cementing, resist oils and water, last for years. One standard economy package of ten 18" x 18" ISOMODE PADS gives you enough for mounting 160,000 pounds of equipment. Write for prices and detailed Bulletin No. 415.

**the MB manufacturing company, inc.**  
1060 State Street, New Haven, Conn.

HEADQUARTERS FOR PRODUCTS TO ISOLATE VIBRATION . . . TO EXCITE IT . . . TO MEASURE IT

Circle No. 74 on Reader Service Card



of butting together smaller grilles unnecessary. Fins are curved, have hemmed edges, and provide 80% free area. No see-through is possi-



ble. Units are made of 18-gauge cold-rolled steel, and have gray lacquer primer as standard finish.

Circle No. 142 on Reader Service Card

#### Capacitor Packs

**Product:** Assembled packs for power factor correction for air conditioners.

**Manufacturer:** Aerovox Corp., New Bedford, Mass.

**Features:** Packs include starting, running, and fan capacitors. Assemblies may be extended to include relays, pressure controls, fuses, and other controls. Either conduit-type boxes with BX cable and standard fittings, or rain-tight containers for outdoor mounting are

available. Units may be obtained to meet any standard specifications. Advantages include elimination of



possible wiring errors, improper handling, and similar hazards. Boxes are finished to suit individual color and finish requirements.

Circle No. 143 on Reader Service Card

#### Time Switch

**Product:** 24-hour time switch for control of intermittent operations of air conditioning or refrigeration systems.

**Manufacturer:** Zenith Electric Co., Chicago, Ill.

**Features:** Dial is sealed in 15-minute graduations for as many as 48 on and off operations, including

automatic repeating on 24-hour schedules. Supplementary calendar device is also available, permitting



cutout on non-working days. Compact switch has rated capacity of 1000 watts, for 110 to 240 volts.

Circle No. 144 on Reader Service Card

#### GRIFFITH APPOINTED

Griffith Distributing Co., Indianapolis, has been appointed by Fedders-Quigan Corp., to handle its line of room air conditioners for that area.

## NEED

heavy duty, large capacity water level controls? Maid-O'-Mist's No. 6900 series float control diaphragm valves are especially designed for air conditioning equipment, evaporative coolers, air washers, etc., and will accurately control water at any level. Water can be discharged upward or downward as specified.

## WATER LINE FLOAT CONTROL VALVES



- ✓ CAPACITIES:  
1 1/4 gals. to  
4 gals. per minute
- ✓ CAST BRASS BODY
- ✓ COPPER FLOAT
- ✓ NEOPRENE DIAPHRAGM
- ✓ INLET AND OUTLET  
TAPPING  
1/4" I.P.T.

BRASS  
MOUNTING PLATE

Available for special  
mountings

See your jobber or write

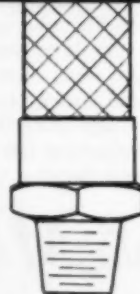
**MAID-O'-MIST, Inc.**

3217 NORTH PULASKI ROAD, CHICAGO 41, ILLINOIS



Circle No. 75 on Reader Service Card

## VIBRATION PROBLEM?



**ENGINEERS and SERVICEMEN** Are you confronted with vibration and noise problems in compressor lines? If so, specify **PACKLESS** Flexible Vibration Absorbers for the answer. Size range to fit 1/4" O.D. — 10 1/2" O.D. copper tubing. Write for Bulletin VA-3.

**PACKLESS**  
METAL HOSE INC.

31 - 10 WINTHROP AVE., NEW ROCHELLE, N. Y.

Circle No. 76 on Reader Service Card

AUGUST, 1955 • COMMERCIAL REFRIGERATION

## MAIL CAMPAIGN . . .

*Continued from page 84*

petition. Here is how air conditioning can put your business in a more competitive position:

"Air conditioned stores receive the preference of customers seeking a few minutes' relief from those boiling Chicagoland summers.

"Air conditioning means better employee relations, hence better customer relations.

"A cleaner place of business is yours with air conditioning.

"Your inventories are kept in a more saleable condition.

"Your store is stamped as a modern, progressive business."

Another letter, with the headline "Businessmen Recognize Air Conditioning is a Modern Sales Stimulator", pointed out that "even after World War II, air conditioning in the home or business was considered a luxury. Architects and businessmen agreed that air conditioning was comfort for customers and employees, but bore no clear relationship to increased sales.

"This opinion has been shattered," the letter continued, "shattered so completely that every really modern structure erected today includes, as an essential, air conditioning."

All three letters, of course, closed with paragraphs listing the various advantages of the equipment handled by each of the seven participating dealers.

The seven dealers who took part in the campaign were contacted after each mailing. The final results were reported as follows:

Dealer No. 1—10 leads received, 4 leads quoted, 1 sale closed. Dealer No. 2—9 leads received, 4 leads quoted, no report on sales closed. Dealer No. 3—24 leads received, 23 leads quoted, 6 sales closed. Dealer No. 4—25 leads received, 22 leads quoted, no report on sales closed. Dealer No. 5—Did not keep track of leads, but said he sold 2 units as a result of campaign. He considered the campaign definitely worthwhile. Dealer No. 6—Did not keep track of leads, and thought the campaign was a good idea. However, he said he was disappointed at the number of "infor-

mation seekers" he received. Dealer No. 7—Did not keep track of leads, but said he believed at least 2 sales resulted from leads originating from the mailings.

Cost of the campaign, including material and mailing administration, all underwritten for the seven dealers by Temperature Equipment Corp., averaged \$1647 per mailing, with the total campaign cost being \$4940.

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**



### "Solvex Cleaner reduces head pressure to normal in a few minutes while the machine is working"

Few cooling towers, shell and tube condensers and "evaps" can operate indefinitely without being cleaned. Accumulation of scale, algae, grease, slime and dirt can cause real trouble such as poor heat transfer . . . high head pressures . . . and increased operating costs. The way to clean up such trouble is with SOLVEX CLEANER GRAINS AND TABLETS, which can be used while the machine is working. Head pressure usually returns to normal in 15 to 45 minutes.

SOLVEX CLEANER is SAFE—safe for the operator who uses it, safe for the equipment he uses it on. SOLVEX aids in preserving metals. It disintegrates the scale and algae to sludge that can be harmlessly drained from the sump. In cases where very bad conditions exist ULTRA-SOLVEX is recommended.

Much of the trouble encountered in the operation of water-cooling

## HANDLES TENNEY TEST CHAMBERS

Ridgeway Engineering Associates, with offices in Chicago and Indianapolis, has been appointed by Tenney Engineering, Inc., to handle sales of specialized environmental test equipment, including altitude, temperature and humidity chambers, and subarctic low temperature industrial cabinets. Ridgeway will cover Illinois, Indiana, Iowa, Wisconsin, and part of Kentucky.

equipment can be prevented. Cooling towers and evaporative condensers, newly installed or after being cleaned, should be given the SOLVEX MAINTENANCE treatment to stop corrosion and retard scale formation and the growth of slime and algae. The SOLVEX MAINTENANCE FORMULA is obtainable in tablet form or in granular bulk (grains).

You can find out about these fine-quality products at your wholesaler or by writing—

**Chemical**  
**SOLVENT COMPANY**  
P.O. BOX 487 • BIRMINGHAM, ALA.

## LUBRICATION . . .

*Continued from page 88*

frothing and carryover into the compressed refrigerant system. Proper design and choice of lubricating oil can minimize these objectionable features.

Flooded lubrication provides arrangements of vanes, discs, screws, shaft grooves, etc. that raise the oil from the sump to an elevated point from which it gravitates back

down to the various parts. At most, only a very mild pressure by these devices, but the oil is less violently agitated than in the splash system and is perhaps a little more positively transferred to the point where it is required. Some quieter operation and less fogging and oil carryover should therefore be possible with the flooded lubrication system.

Forced feed lubrication provides gear, vane or plunger pumps and tubing or cast or bored channels to carry the exact quantity of oil

required to the various parts. The moving stream of oil can be utilized not only to lubricate but to carry heat away from the parts, coolers sometimes being included at some point in the oil system. All moving parts can be more closely and accurately fitted to provide a smoother running, quieter machine. Forced feed lubrication is rather generally supplied in units of 1 hp and above, and is almost universal in units above 15 hp sizes.

On many types of the larger machines, internal and external parts are lubricated individually. The design may provide both a mechanical forced feed lubricator with several outlets for cylinder, stuffing box, and internal bearings and an independent gravity or mechanical pressure circulating system for all external bearings.

Forced feed lubrication permits effective filtration or purification of the oil while it is circulating. Even the smallest machines include a fine wire mesh screen over the pump suction to strain out such stray particles of metal or trash as might be present. Larger machines may circulate all or a portion of their oil through a filter designed also to remove some of the sludges or contaminants which might be present.

## EFFECTS OF REFRIGERANTS ON LUBRICATING OIL

The choice of a refrigerant will be influenced by the specific conditions to be met by an air conditioning system; and the refrigerant, once chosen, will influence the design of the compressor and the characteristics required in the lubricating oil. In applications where the reciprocating compressor is most advantageous, refrigerants of high vapor pressure give best results, due to low piston displacement and small friction loss. With the centrifugal compressor, it is necessary that the refrigerant have low pressure to reduce the number of stages. A heavy density of the vapor is desirable, however, in order to reduce peripheral speed.

"Freon-12" or "Genetron-12", "Freon-22" or "Genetron-141", and "Freon-114" are the refrigerants most commonly used in the hermetic units so widely favored for small air conditioning units. A

## C-D MOTOR CAPACITORS ARE

# THREE WAYS BETTER

1. C-D Motor Capacitors start out under the most rigid raw material controls. Passable ingredients are discarded in favor of only the highest purity and quality.
2. C-D "know-how" through research, rigid control in processing and brutal life-testing "beyond the call of duty".
3. Proven dependability in field service for over 44 years. Year after year C-D continues to serve its many satisfied customers. There are literally millions of C-D Motor Capacitors in use today.

Always insist on C-D Capacitors—there's a right type for every motor made. Your C-D Distributor has it. He's listed in your classified 'phone book. Dept. CR-85, Cornell-Dubilier Electric Corporation, South Plainfield, New Jersey.



## CONSISTENTLY DEPENDABLE CORNELL-DUBILIER CAPACITORS

PLANTS IN SOUTH PLAINFIELD, N. J.; NEW BEDFORD, WORCESTER AND CAMBRIDGE, MASS.; PROVIDENCE AND HOPE VALLEY, R. I.; INDIANAPOLIS, IND.; SANFORD AND FUGAY SPRINGS, N. C.; SUBSIDIARY, THE RADIANT CORPORATION, CLEVELAND, O.

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special refrigerant, "Carrene-7", is occasionally used to compensate for the capacity reduction caused by the reduction in speed occasioned when a 60 cycle motor is connected to a 50 cycle power source.

Large scale air conditioning units employ a wide variety of refrigerants including various "Carrene", "Freon" and "Genetron" compounds, ammonia and sulphur dioxide. These last two are most apt to be used in installations where the primary cooling system is remote from the space cooled, e.g. where water is cooled and circulated to space coolers throughout a building. The danger of escaping irritant gases to occupants of the building is thus minimized.

The usual refrigerants have varying degrees of miscibility with lubricating oil ranging from practically zero for ammonia to complete miscibility for methylene chloride, "Freon-11", "Genetron-11", "Freon-12", and "Genetron-12". Refrigerants "Freon-22", "Genetron-141" and "Freon-114" present a special case. They will generally be completely miscible with lubri-

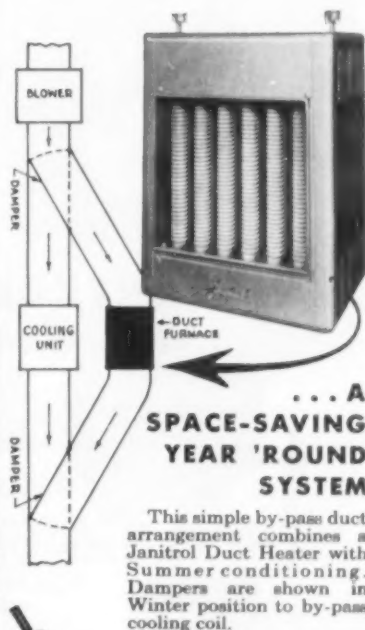
cating oils at temperatures above a certain "miscibility temperature", but their solution with oil may separate into two liquid phases when cooled below that temperature, depending on the composition of the mixture. A principal effect of refrigerant dissolved in the lubricating oil is a reduction in viscosity which may reduce the ability of the oil to do its job of lubricating the machine and sealing in the refrigerant pressure.

The design of the compressor will determine the extent to which properties of the lubricant are affected by properties of the refrigerant. The centrifugal machine presents a comparatively simple problem in that there is little contact between refrigerant and lubricating oil. The leakage of the refrigerant will not be sufficiently extensive to give any concern as to the resultant lubricating ability of an oil which has been specifically refined for this class of service. In reciprocating and rotary machines, splash and flooded lubrication where the refrigerant circulates through the crankcase immediately establishes an equilib-

## Why experts prefer Janitrol Duct Heating for year 'round systems

Cooling experts know the Janitrol name means dependability and quality. The Janitrol Gas-Fired Duct Heaters install fast in either heating and/or cooling systems. They have a proved record of amazing durability . . . since 1940, in over a million heat exchanger tubes, less than 1/4 of 1% have been replaced for any cause!

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Janitrol products are engineered by Surface, makers of the famous furnaces that heat most of the products of American industry.

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HEATING AND AIR-CONDITIONING  
DIVISION

Surface Combustion Corporation, Columbus 16, Ohio  
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## Electronic Controls

- Provide fully automatic control of temperature and humidity in areas where constant maintenance of desired conditions is of high importance
- Control is ultra-sensitive to a fraction of a degree in a range of 20° to 120° F, 25% to 90% relative humidity — no drift or shift from control point
- Get remarkable flexibility — control temperatures from an average of several points, use secondary elements to compensate for changes, control sequences to match job requirements
- Two-position or proportioning types
- Complete selection of equipment — motor-operated valves, control motors, program switches, sensing elements, humidistats, thermostats — from a pioneer manufacturer of electronic devices



- Use Barber-Colman's experience, gained in installations throughout the nation

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Consult nearest Field Office or write . . .

**Barber-Colman Company**

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Circle No. 80 on Reader Service Card

& AIR CONDITIONING • AUGUST, 1955



rium between oil and refrigerant, as will any type of lubrication in the sealed hermetic compressor. Machines with forced feed lubrication will vary in the degree of contact afforded between oil and refrigerant.

Apart from mechanical and constructional conditions, the amount of "Freon" or "Genetron" refrigerant which will be absorbed by any mineral oil will be dependent upon the viscosity of the oil, the temperature and pressure of contact, and the nature of the oil. Lower

viscosity oils absorb more of these types of refrigerant for a given weight than will higher viscosity oils. Low temperature and high pressure favor absorption. A paraffinic oil absorbs slightly less of these types of refrigerant than a naphthenic oil of equal viscosity.

The accompanying chart indicates the magnitude of the effect of refrigerant ("Freon-22") in solution in a series of naphthene base refrigeration grade lubricating oils at 100 F. The oils range in nominal viscosity from 150 to 300 Saybolt

Universal Seconds at 100 F; and equilibrium mixture pressures of 0-115 p.s.i.a. are covered. A comparative curve for a nominal 300 SUS viscosity paraffin base oil is also shown.

#### OIL CARRYOVER

If a compressor crankcase contains too much oil or agitation is too violent, excessive quantities of oil may be carried to the cylinder walls. Part of this excess may tend to work its way past the piston or piston rings and enter the compressed refrigerant spaces where it will interfere with condenser and evaporator efficiencies. Some quantities of oil may be carried along in the refrigerant stream as it passes from crankcase pressure to discharge pressure in the compressor.

Many refrigeration system designs include an oil separator to minimize the carryover of oil, and the separated oil may be returned to the compressor for reuse. The actual function of the oil separator is to remove any particles of oil from the refrigerant while it is in gaseous form, after it has left the compressor.

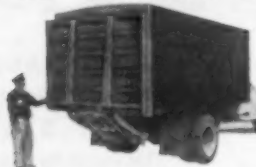
The larger the oil particles, of course, the more effective will be the separator. It should, therefore, be located at sufficient distance away from the compressor to permit adequate precipitation of the oil from the refrigerant gas. The capacity or volume should be ample so that velocity of the gas passing through the separator will not be too high. Where it is impossible to locate the main oil separator elsewhere than adjacent to the compressor, it is well to use an oil of as low an atomizing tendency as possible, i.e. one of as high viscosity as is suitable for the lubrication requirements of the machine.

(To be continued)

## NOW...WHICH SIZE FITS YOUR DELIVERY NEEDS?



### NEW ANTHONY "LIFT GATE" For 3/4-Ton and Larger Trucks



Model No. 146 handles up to 4000 lbs. on heavy trucks and semi-trailers.



Model No. 145 handles up to 2000 lbs. on 1 1/2-Ton and larger trucks and semi-trailers.



Model No. 130 for Pick-up Trucks with steel express bodies.

This new lower priced Anthony Model No. 144 "LIFT GATE" handles loads up to 1000 lb. (other sizes from 800 to 4000 lbs. are available). Lift Gates in all sizes let one man do the work of three or more when loading or unloading a truck with heavy bulky freight — and in one-third the time. Loading and unloading is done with ease by moving one conveniently located lever to control the powerful hydraulic action of the "LIFT GATE". With the time saved in loading and unloading you can double your deliveries. Damage to merchandise and personnel accidents are greatly reduced. One "extra" delivery each day will pay for your Anthony "LIFT GATE". Write today for complete information. Dept. 5508.



**ANTHONY COMPANY**  
Streator, Illinois

#### USAIRCO NAMES NEW DISTRIBUTOR IN TEXAS

Comfort Heating & Air Conditioning, of Lubbock, Tex., has been appointed a distributor by the United States Air Conditioning Corp. for the South Plains trading area. The distributorship is headed by Grady Lee Campbell and Joe E. Scott.

## OLD MEXICO . . .

*Continued from page 53*

sioned him to design and build a modern fishery plant in Veracruz, on the Gulf of Mexico.

Prior to the actual installation of this plant, however, Medina made a trip to Toledo to see at first hand the Hosko installation, the description of which had sparked his original inspiration.

The Mexican Fishery Plant constructed by Medina is located just a 5-minute drive from the fishing docks in Veracruz. It was designed to provide the following facilities:

(1) The refrigeration of 40,000 pounds of fish to be cooled at 32 F in 24 hours. The equipment handling this product load, plus normal heat leakage, consists of a 15-hp compressor operating in conjunction with two 5-ton floor type product coolers.

(2) A 14 x 15' quick-freeze room held at -20 F. Refrigeration for this room is provided by 2-ton low temperature unit coolers hooked up to another 15-hp compressor.



**DOWN THE CHUTE** tumble the ice cylinders from the 5000-pound ice making machine installed in the fishery plant. Crushed ice also is available if desired.

(3) A 45 x 14' zero storage equipped room with a 10-hp compressor and a 5-ton product cooler evaporator.

(4) A 5000-pound automatic ice making machine.

(5) A 14 x 15' room to provide storage for either crushed or cylindrical ice produced by the ice

machine. This ice is used to pack and glass fresh fish in order to prevent dehydration.

The cooler room, the quick-freeze room, and the zero storage room are laid out in the order mentioned, and each one is accessible through a door to the other. The zero storage room has an extra door which provides access to the cooler, and the cooler has access to the ice storage room through a corridor which also communicates to the zero storage room.

Entrance to the cooler is provided by a 40 x 8' anteroom which is held at 50 F. In this anteroom, fish is cleaned, washed, filleted, scaled, and packaged for freezing.

Refrigeration equipment used in this installation included Curtis compressors using Freon-12, Rigid-bilt product coolers, and a Vogt ice maker. All doors to the refrigerated rooms were fabricated of stainless steel. A concrete cooling tower with asbestos louvers was installed to prevent rust and corrosion.

## THIS IS IT!



**OPENING  
HERMETIC  
COMPRESSORS  
can be a  
PROFITABLE  
BUSINESS**

Millions of Hermetics  
in use . . .

thousands in  
need of repair

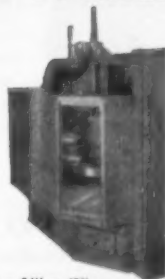
## the NEW-SIMPLE-TO-OPERATE **FRANKELL'S HERMETIC COMPRESSOR OPENER\*** EASILY OPENS ANY COMPRESSOR UP TO 20" IN DIAMETER

A compact, semi-automatic machine that can open any size or shape compressor, regardless of the location of weld. A "do-it-yourself" machine. Simple to operate, requiring no special skills or any training.

**The repair of HERMETICS 'is a MUST' for every progressive service company.**

Get the full FRANKELL story at your local refrigeration jobber or write direct for complete information.

SIZE: 40" x 24" x 40"  
Approx. Weight: 350 lbs.  
\*(Pat. Pend.)



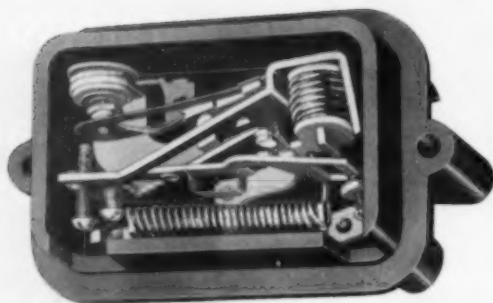
**FRANKELL MFG. CO.**

1074 HOME ST. NEW YORK 59, N. Y.

EXCHANGE HERMETIC  
STATORS AVAILABLE.  
SEE YOUR LOCAL JOBBER.



There's a  
simpler way...



**Here's the right  
reference to the  
right controls**



Ranco Replacement Reference No. 1544 shows you which control to use on which job . . . lists over 5,000 replacements (most complete line in the industry). Buy yours from your Ranco wholesaler now! (It is not available from the factory.)

World's Largest  
Manufacturer of  
Refrigeration Controls

## **RANCO**

### **EXACT RELAY REPLACEMENTS**

Choice of the correct relay is easy when you bank on Ranco. Ranco's line of motor relays is the most complete in the industry . . . features the *right* relay for the specific installation at hand.

You eliminate "searching" time, you complete the job quickly on the initial call, and you make a handsome profit when your *first* stop is your Ranco wholesaler. Install Ranco Relays . . . to be sure.



# *Ranco Inc.*

COLUMBUS 1, OHIO

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## THE SERVICE MAN'S DEPARTMENT

# HERE'S HOW!

### If Flux Won't Wet Surface, It's Too Dirty for Brazing

Given a well-cleaned, fluxed surface to work on, silver brazing alloys will wet easily to produce strong, leak-tight joints. Flux helps the molten alloy wet metals by reducing surface tension and by removing and inhibiting oxidation. But unless the flux itself wets the metal initially, there is little chance that the brazing alloy can do so. (This does not apply to the special alloys developed to silver-braze copper without flux.)

Flux is compounded to remove a certain amount of metal oxides, and contains a wetting agent to help break up thin films of oil such as are commonly encountered on mill supplied materials. However, when the accumulations of dirt, grease, oil and oxides become excessive, they can retard wetting by both the flux and alloy. Consequently you can often predict if the brazing alloy is likely to wet by examining the way the flux adheres to a surface.

To illustrate this point, technicians at the engineering laboratory of Handy & Harman, manufacturer of silver brazing alloys and fluxes, took a thoroughly oily steel plate which has been lying around the shop. They cleaned and degreased one half of the plate; the other half they left intact. They then applied standard "Handy Flux" to each half. The results are shown in the accompanying photograph.



### I DO IT THIS WAY

**W**HEN I find a stubborn stuck float or expansion valve, I connect a piece of tubing from the high side gauge port to the low side gauge port. Then closing both valves one turn forces the high side gas to rush into the evaporator and raise the float, at the same time flushing out any dirt or foreign matter that may be lodged there. I have used this method many times, and usually it is all that is needed to correct the situation.

George H. Halla  
New London, Conn.



### WANT TO EARN \$5?

You don't have to be a literary genius to pick up a fast five-spot. All you have to do is jot down some of the shortcuts you've developed in your maintenance or installation work and send them to Here's How Editor, Commercial Refrigeration and Air Conditioning. If the Editor votes "yes" on your contribution, your \$5 will be paid promptly when your maintenance tip is published in the magazine. Let's hear from you!

### Torque—What It Is and How To Measure It

The torque of a motor is its turning force, and it is one of those fundamentals of electric motor application about which any serviceman who deals with electric motors should have a working knowledge. In a recent issue of Bodine Electric Co.'s *Motorgram*, the following helpful information was presented concerning the characteristics of torque and the method by which it can be computed:

In large motors torque is usually measured in pound-feet. In fractional horsepower motors, because of their diminutive size, the torque is usually measured in ounce-inches. The equation used to express torque is  $T \text{ (torque)} = F \text{ (force)} \times R \text{ (radius)}$ . Applying this equation to a simple problem, we find that a motor which will just lift a four-ounce weight lo-





Complete outfit, \$76.50

### For Quicker Installations

## PREST-O-LITE Oxy-Acetylene

Trade-Mark

### Welding and Cutting Outfit

**PORTABLE**—Light and compact. Take it anywhere—use it anywhere.

**MODERN**—Exclusive new blowpipe welds, cuts, and brazes. Just change the tip. No attachments or "extras" to buy.

**HANDY**—Small and easy to use. Always ready.


**VERSATILE**—Welds sheet and light plate; cuts easily through heavy steel. Changes over simply and quickly.

Oxygen and acetylene readily available in cylinders sized to meet your exact needs.

Write today for free descriptive booklet and name of nearest distributor.

"Prest-O-Lite" is UCC's trade-mark.

**LINDE AIR PRODUCTS COMPANY**

A Division of Union Carbide and Carbon Corporation  
30 East 42nd Street  New York 17, N. Y.

## Why Guess?

...when you can be sure with

## LIQUID EYE®

The industry-accepted indicator for all refrigeration purposes.



LIQUID EYE "100"

in 1/4" and 3/8" flare and O.D.S. sizes in the 100 Series.



LIQUID EYE "200"

in 1/2" and 3/4" flare and O.D.S. sizes in the 200 Series.

**LIQUID EYE MEANS:** perfect refrigerant visibility • state-thru flow • leak-proof • high safety factor • spring loaded gaskets • standard wrench flats • instant analysis of refrigerant condition.

Sold by leading Wholesalers. Send for Catalog D-55, covering the complete Allin Line.



Circle No. 85 on Reader Service Card

cated two inches from the center of the shaft exerts a torque of 8 oz-in.

Motors with speed reducers will develop abnormally high torque at the slow-speed shaft of the speed reducer. It is, therefore, necessary to provide ample safety clutches or shear pins between the speed-reducer shaft and load in case the load is suddenly blocked. If not, the high driving torque will cause the shaft to twist without stalling the motor. Gears may be damaged or shafts sprung beyond repair. These are important considerations and should be borne in mind in all applications.

Another important point in selecting speed-reducer motors is to specify the torque and speed at the slow-speed shaft. This is because the efficiency of the speed-reducer unit is less than 100%. The horse-



**W**HEN flaring a piece of soft copper tubing, I sometimes find that the flare nut will not slip far enough onto the tubing, due to a flat or dented spot. Rather than try to hammer or roll this irregularity out, I just take an adjustable wrench and adjust it to a snug fit on the tubing. Then I rotate the wrench around the dent several times and the high spot always comes out, allowing the nut to pass.

Paul W. Hinnant  
Whiteville, N.C.

power output of the slow-speed shaft is less than the horsepower input to the speed reducer.

The torque required to drive a machine can be measured with a simple pulley, string, and weights or spring balance. The pulley is fastened to the shaft and weights are loaded on a string wound around the pulley until the pulley turns. The torque in ounce-inches is found by multiplying the radius of the pulley in inches by the weight in ounces.

A spring balance may be substituted for the weights, and the scale read just as the load moves. Allowance must be made for the weight of the scale.

The test should be made at the point where the starting load is greatest.

## Your Customers' Best Buy...

### IDEAL

## Speed-Freeze PRODUCTS

**BEVERAGE COOLERS**  
unexcelled storage capacity  
(56 cases 12 oz. - 8 ft. cooler!)

**INSTANTANEOUS  
DIRECT DRAW  
DRAFT BEER COOLERS**  
(with refrigerated faucets!)

### IDEAL

**COOLER CORPORATION**

2953 Easton Ave. St. Louis 6, Mo.



## WORTH ITS WEIGHT IN GOLD!

Hundreds of thousands in use daily! A handy voltage indicator of unlimited use. Takes the place of costly, delicate instruments. Carry it in your pocket, or drop it in your tool box — it's always ready for use!

★ **RUGGED!** Neon lamp indicator stands overloads, mechanical shock, and lasts a lifetime. Practically indestructible!

★ **ACCURATE!** Measures AC or DC. Indicates 2-3 volt difference at 110 volts. Checks fuses, continuity, shorts, live wires, grounds, voltage drops, etc.

Model 4008 including 12" insulated leads and test prods.

**\$3.75 LIST**

Order from your distributor.  
Write for free catalog...

**INDUSTRIAL  
DEVICES INC.**  
EDGEWATER, N. J.

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## ADVERTISING MEDIA . . .

Continued from page 91

**Direct mail.** A well-prepared and thought out direct mail campaign can mean great returns on sales. Look at it from your prospect's point of view. If you receive a direct mail piece at consistent intervals during the year, and finally decide to look into the matter further, you'll naturally check into the type of equipment that the dealer from whom you have been receiving the direct mail has to offer. Seldom, if ever, does the prospect say "I'll buy!" from advertising alone. Advertising interests the prospect up to the point of contact—from there on it's up to you and your salesman to close the sale.

Your manufacturer has developed—and ready for you—direct mail pieces that you can use very effectively in your territory. Reprints of national magazine advertisements on your product are also available from your manufacturer, without charge in most instances. Detailed instructions on how to use direct mail—the best times to send it for various types of products—can also be had from your manufacturer. It's for free, and it will make money for you.

**Radio.** There are two major considerations here. First is the area covered by a given radio station, and the other is the listening audience the station enjoys during the time which you are considering for advertising. Both statistics are available from the stations in your area. In territories where both radio and television stations exist, best radio times are immediately before and after 8 a.m., on weather forecasts during the day, and between 5 and 7 p.m. in the evenings. If television reception is not available, other good radio spots are in the evening up to 10 p.m. Sponsoring a radio weather forecast is especially good during evening hours in a no-television area.

**Television.** This media is becoming increasingly important as a merchandising aid. Before you decide to go ahead, however, check up on the following factors:

The so-called "captive audi-

# WATSCO STRAIN-O-KAP®

THE MODERN REFRIGERANT METERING DEVICE  
A SUPERIOR STRAINER CAPILLARY TUBE COMBINATION  
WITH EXCLUSIVE TRIPLE STRAINING ACTION.

**NO CUTTING!  
NO GUESS WORK!  
NO ADJUSTMENT!**  
**COMPLETE — ALL IN ONE  
FOR SEALED AND OPEN UNITS**

Strain-O-Kap is a scientifically designed precision metering device that will operate efficiently regardless of the make or model or refrigerant used. Install Strain-O-Kap on any equipment\* and get 100% results.

### THE RESTRICTOR TUBE FOR S-1 AND S-2

Hard tempered, seamless copper tubing, precision drawn and individually tested for proper pressure drop. The outlet of the restrictor tube is .081 O.D. and can be installed either by soldering or using a standard capillary tube fitting.

### THE STRAINER FOR S-1 AND S-2

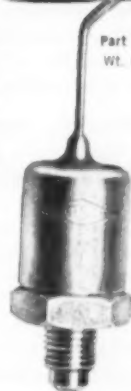
Three scientifically designed monel screens graduated 60, 80 and 120 mesh to strain the refrigerant and break up the turbulent and erratic flow of globules of oil that travel along with the refrigerant. This action results in both a quiet efficient supply of refrigerant, together with a pressure drop so desirable in capillary systems.



Part No. S-1  
Wt. 5 Oz.



Part No. S-2  
Wt. 6 1/4 Oz.



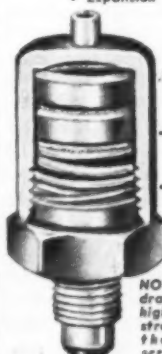
S-1 Strainer is made of hard drawn spun copper tubing with solder fittings for 1/4" O.D. tube.  
S-2 Strainer's non-porous brass shell may be disassembled and cleaned. Inlet is provided with a standard 1/4" male flare connector.

#### REPLACES

- High side float
- Low side float
- Restrictor tube
- Original capillary tube
- Expansion valve

#### CONVERTS

- SO<sub>2</sub> systems to Methyl Chloride
- SO<sub>2</sub> systems to F-12
- Methyl Chloride to F-12



120 MESH

80 MESH

60 MESH



NOTE: This cut-away drawing shows the highly efficient triple straining action of the three mesh screens.

#### \* FOR SEALED AND OPEN UNITS

- Refrigerator 1/20 to 1/5 HP inclusive
  - Water coolers 1/4 HP and less
  - Freezer cabinets 1/5 HP and less
- For use with following refrigerants:  
SO<sub>2</sub>, Methyl Chloride, F-12, F-21,  
F-22, F-114, Carrene and Methyl  
Formate.

- Just One Size for All Units\*
- Three Monel Mesh Strainers
- Less Capillary Noise
- Individually Tested and Calibrated for Proper Pressure Drop
- Precision, Hard Drawn Capillary Tubing
- Baked and Individually Packed in Heat Sealed, Moisture Proof Containers
- Guaranteed Satisfaction

SEND FOR WATSCO'S NEW 1955 CATALOG!



WAGNER TOOL & SUPPLY CORP. REFRIGERATION PARTS & TOOLS  
40-08 22nd STREET, LONG ISLAND CITY, 1, N. Y.

ence", or the number of potential viewers in your area in relation to the number of television stations there. Before you spend your money, you want to be certain that you'll reach potential customers to make it worthwhile. Get the statistics from your local stations before you decide.

Check the television station's lists for the programs with the largest number of viewers. Get your messages as close to these high-viewer times as you can.

Preparation costs for television advertising can be high if you prepare your own material. See what your manufacturer has to offer, and make use of it if you can. Generally speaking, television should be considered only after your mass media budget in newspapers, telephone directory and direct mail has been sufficiently built up. Best time to advertise on television is generally in the evening hour before 10:30 p.m. Sometimes good spots can be found between day-time network shows. A weather forecast program in the evening hours should be especially effective for air conditioning firms.

**Billboards.** Availability of good locations is of prime consideration in this choice of media. Get in touch with your local billboard contracting organizations and see what is available. A good selection of billboards can be very effective in your local merchandising program. By comparison with some of the other media, costs in this field are surprisingly reasonable.

In this same category are car cards in street cars and buses. In some instances cards for this purpose are available from your manufacturer; in others, a local advertising agency can prepare them for you. Billboard poster sets can be obtained, in most cases, from the manufacturer.

In the "billboard" category also are metal signs (most manufacturers can supply them) that you can tack on to buildings and barns, along the roadside, on your own trucks, etc. If you can obtain them, these are dandy "identifications" for you to use along highways leading to your community.

Now for the so-called "minor" merchandising media. In this gen-

eral class would come such things as:

**Home show and trade show exhibits.** Check the various trade shows scheduled for your community. If your budget is limited, you may not be able to "make" all of them, but an exhibit in a few "picked" shows can pay you big dividends.

**Builder and model home promotions.** Get into as many of these as you can—it's good business. You benefit from high interest on the part of those who take part in or visit these events. Movies

**E**XTENSIVE revisions have been made in the 1955 edition of "Air Conditioning-Refrigerating Data Book, Applications Volume" published by American Society of Refrigerating Engineers, and now available at the organization's offices, 234 Fifth Avenue, New York 1, N.Y.

Written by 89 experts, this new fifth edition contains 61 chapters, 343 illustrations and 104 tables and runs to 984 pages. There are three entirely new chapters—Precooling, Fishing Boats, and Passenger Automobiles and many other chapters have been completely rewritten. The volume includes design information, formulae, tables, diagrams and sample engineering calculations. Manufacturers of components and assembled air conditioning and refrigerating equipment units are listed in a classified section.

The book, leather-bound, is priced at \$7.50 a copy.

on your product (available on loan from your manufacturer or distributor) before builder groups is another fine promotional activity for you.

**Point-of installation identification.** This phase of merchandising includes signs located at the various installations you make, on your service trucks, etc. Remember, the homeowner who installs air conditioning is just as proud of this as you are. He may protest mildly, but chances are he'll let you install a sign on his premises letting his neighbors know that he's "going modern" with air conditioning—and that you're doing the job for him.

**Displays in utility and other public buildings.** Don't overlook this part of your merchandising

and advertising program. Your local power company will probably be only too glad to let you install a display in the lobby, since it may encourage other customers to add a power-consuming appliance in their own locations. Other good display locations are airports, railroad stations and bus depots.

**Local publicity.** Though not an expense item, this is definitely a part of your advertising campaign. Proper publicity can double the value of your advertising dollar by tying-in your name with air conditioning in your community.

Your biggest source of publicity is your local newspaper. Air conditioning ideas, new methods, new programs—all of this has publicity value. All leading manufacturers regularly prepare publicity items (many have publicity kits that you can adapt for your own community) and by obtaining these and giving them a "local angle" by identifying your own company with this activity, you can "get into print" fairly regularly in your area. Remember to prepare the news items carefully so as to make the editor's job as easy as possible. You'll find it will pay off in the results you get.

Publicity also involves good "public relations" with representatives of newspapers, radio stations, etc. who call on you. Maybe you're not buying anything at the moment, but by treating them courteously and listening to their story you might establish a contact that will be useful to you later in placing publicity on you and your products.

#### MITCHELL SOLICITS USER REACTION

A "consumer satisfaction" survey is being conducted by Mitchell Mfg. Co. in an effort to obtain suggestions on ways to improve product performance, and to better installation and servicing techniques at the dealer level.

Every person who buys a Mitchell room air conditioner is provided with a form on which he is invited to make comments as to performance of his unit after it has been put in actual use. The form is mailed back to Mitchell at the company's expense.



Gives long  
service ...



Guards  
against heat flow ...



Protects foods  
in storage ...

## No wonder ROCK CORK is the No. 1 insulation for cold rooms, equipment and piping!

Not just another insulation, *but a many ways better insulation*, Rock Cork has long been the first choice of leading refrigeration engineers.

Rock Cork brings you the excellent insulating qualities of mineral wool, plus the added protection of a moisture-resistant asphaltic binder. Because Rock Cork is basically mineral in composition, it is immune to vermin and mold-growths ... an extremely important advantage wherever odor-sensitive foods are stored.

Rock Cork is produced in sheet, lagging and pipe insulation forms in standard sizes and thicknesses. Rock Cork Pipe Insulation has the additional protection of an asphalt-saturated asbestos

felt jacketing which also speeds installation by reducing the need for seam filling.

**Skilled applicators protect your investment!** For maximum efficiency, insulation must be installed correctly. Be sure that you get the most out of your insulation dollar by calling in a Johns-Manville insulation contractor. For the name of the one nearest you, write Johns-Manville, Box 60, New York 16, N. Y.

**Important insulation facts FREE**  
Folder IN-122A contains property tables and other important reference data on Rock Cork's advantages. Send for it today!



# Johns-Manville **ROCK CORK**<sup>®</sup>

**REFRIGERATION INSULATION**



## STORAGE TYPE COOLING ...

*Continued from page 93*

be checked to be sure it is equal to the maximum load less that portion handled by the compressor directly. In this example the load is 25 tons  $\times$  12,000, or 300,000 Btu per hour. The compressor will handle directly 3.75 tons  $\times$  12,000, or 45,000 Btu/hr. This leaves 255,000 Btu/hr, as the required discharge rate. Capacity of cells decreases as discharge rate increases.

Storage cells are rated at various supply water temperatures. Typical are ratings for 40, 45 and 50 F. High temperature water is used for loads with latent to total ratios below 35%, medium temperature for loads 35% to 50% and low temperature for loads above 50% latent. High temperature water permits greater storage capacity in a given unit.

### Mixing Valve Desirable

A layout of a system designed for conditions assumed in the foregoing example is illustrated in Figure 1. The condensing unit will operate until a bank of ice is built around plates in the storage cell which is sufficient to carry, along with the compressor, the 25-ton load for three hours. Since the compressor, to the limit of its capacity, is removing heat from the storage cell during the cooling period, that capacity is deductible from the total Btu cooling requirement in estimating storage capacity.

A thermostatically controlled mixing valve is desirable, in the water piping, to keep a constant supply water temperature at the coil inlet. Enough return water from the coil is by-passed around the chilling units to keep temperature from falling below the mixing valve setting. Both the cooling and dehumidifying rate of the coil can be controlled by this valve.

### Capacity Increased

A common use of storage equipment is to increase capacity of direct expansion systems. The compressor can operate the direct expansion coil while cooling is required, and charge storage cells at

night or during other times the system would otherwise be shut down. The stored cooling effect can be utilized by a chilled water cooling coil in the outside air duct, serving as a booster for the regular system.

Figure 2 shows the piping arrangement for a booster installation. Solenoids can valve the condensing unit to operate either the cooling coil or storage cells. These solenoids can be under manual or thermostatic control. The thermostat can start the chilled water pump whenever cooling is required, or a two step thermostat can cut in the pump only when the direct expansion coil is unable to maintain required conditions. A clock switch is sometimes used to time the charging period.



It is desirable that just enough ice be formed on storage unit plates to handle the expected load with a reasonable factor of safety. Making the ice covering too thick is wasteful of power, since refrigeration efficiency decreases at low suction pressure.

It is often possible to maintain correct ice build-up by pressure control setting. The cut-in pressure should correspond to 32 F, or about 30 pounds for Freon-12. The cut-out will determine the thickness of ice on the plates. It should be set just low enough to stop the compressor when enough ice has been formed to handle the load for

the following cooling cycle. This may have to be determined experimentally.

The rise in water level over the plates, due to expansion of water as it freezes, serves as an indicator as to when some types of cells are fully charged. Manufacturers' data should be checked for this indication.

### Control Water Temperature

An electronic controller may be desirable when accurate control of ice thickness is required. It consists of a unit which is fastened to a plate, containing two electrodes and a ground wire. This is connected, through a three-wire cable, to an electronic amplifier which starts the compressor when ice melts away from the low limit electrode and stops it when it builds up to the high limit. The amplifier utilizes minute variations in current, caused by the difference in resistance of water and ice, to operate equipment through sensitive relays.

Ice bank units can be arranged to supply water at two or more temperatures to zones of various sizes and at times best suited to each zone. They can serve zones too small to be economically handled by the compressor directly. By control of water temperature and air velocity through coils, it is possible to match capacity to load in each zone so that desired conditions of both temperature and humidity are attainable.

### Parallel Units Possible

Figure 3 shows a typical piping layout for two units in parallel, serving three zones. Any number of units may be connected in parallel to make up required capacity. Water piping should be arranged so that pressure across all cells is the same, so that water flow, charging rate and discharge rate will be the same for each.

A separate pump is used for each zone, controlled by a thermostat in that zone. A three-way mixing valve, controlled by temperature of supply water, mixes return water from the coils in the proper proportion to maintain the temperature for which it is set. It is also possible to control the mixing valves by thermostats in spaces being cooled.

One or more storage units may be used with a hot water system for completely automatic year-round air conditioning. Figure 4 shows the piping layout for such a system. The change from cooling to heating is effected by two three-way valves which may be positioned either manually or thermostatically. Operation of the system is similar to that of a water chiller and heater combination, and will be evident as the water circuit is followed.

The limitations of storage units, such as somewhat lower tonnage per horsepower-hour, will be evident to the experienced contractor or engineer. It is equally evident that, properly applied, they may provide better air conditioning at lower cost.

#### ARI PRODUCT SECTIONS ELECT CHAIRMEN

Chairmen of eight product sections of Air-Conditioning & Refrigeration Institute were elected during ARI's recent meeting in Hot Springs, Va. The sections which named new officers and names of the men elected were:

**Tubular Products:** E. W. Ervasti, Wolverine Tube, chairman; Ray C. McCullough, Bohn Aluminum & Brass Corp., vice chairman.

**Flow Control Valves:** H. F. Spoehrer, Sporlan Valve Co., chairman.

**Temperature Controls:** James Manecke, Ranco, Inc., chairman.

**Refrigerants, Lubricating Oils and Chemicals:** D. P. Barrett, Davison Chemical Co., chairman; L. D. Callans, General Chemical Div., vice chairman.

**Air-Conditioning and Refrigeration Systems:** R. K. Serfass, York Corp., chairman; E. R. Michel, Worthington Corp., vice chairman.

**Heat Transfer:** Vincent Day, Carrier Corp., chairman; Ben M. McDougall, Kennard Corp., vice chairman.

**Room Air-Conditioner:** William C. Egan, Carrier Corp., chairman; E. G. Doris, Mitchell Mfg. Co., vice chairman.

**Valves, Driers, Fittings and Accessories:** C. V. Gary, Henry Valve Co., chairman; W. A. Siegfried, Superior Valve & Fittings Co., vice chairman.

#### SAFETY COMMITTEE ELECTS OFFICERS

Carl F. Brooks, Dayton, Ohio, code representative of Frigidaire Div., General Motors Corp., has been elected chairman of the Refrigeration Industry Safety Advisory Committee.

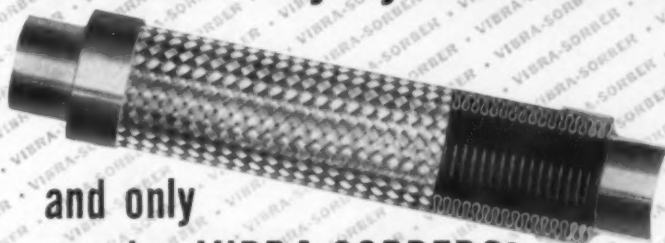
Other officers elected by the group are: Vice Chairman, R. L. Williams, "Kinetic" Chemicals of Wilmington; Treasurer, Geo. S. Jones, Jr., managing director, Air-Conditioning and Refrigeration Institute of Washington, D.C.

RISAC is made up of representatives from the ARI, National Electrical Manufacturers Association and Compressed Gas Assn.

Mr. Brooks has been associated with the Frigidaire Division since 1928, and is a member of the ASA Interpretations subcommittee which is charged with interpreting the provisions of American standard safety code.

**BUY FROM YOUR  
REFRIGERATION WHOLESALER**

## Genuine VIBRA-SORBERS® are made only by FLEXONICS



and only  
genuine VIBRA-SORBERS®  
give you all these plus values—

● The best way to be sure of your vibration connections to and from the compressor is to be sure that the connections are made with genuine VIBRA-SORBERS. And it is not a genuine VIBRA-SORBER unless it is made by Flexonics Corporation.

In addition to the advantages listed at the right, genuine VIBRA-SORBERS feature a special corrugation formation combined with a balanced bronze braid designed to provide maximum resistance to fatigue and the maximum in vibration and noise absorption.

Don't be misled, be sure you get genuine VIBRA-SORBERS. Available in all standard sizes from 3/8" through 4" I.D. Bulletin 139 gives full VIBRA-SORBERS specifications. Write for your copy.

✓ **HIGH QUALITY SPECIAL BRONZE ALLOY**—98.75% copper, 1.25% tin, assures maximum resistance to fatigue under constant flexing and vibration.

✓ **LISTING BY UNDERWRITERS' LABORATORIES** in sizes 3/16" through 1 1/2".

✓ **HIGHEST CLEANLINESS STANDARDS** prevent foreign matter being brought into system. Vibra-Sorbers delivered to you with ends sealed.

✓ **APPROVED BY MAJOR MANUFACTURERS**—the standard of the industry as original equipment.

✓ **NEATLY PACKAGED AND LABELED** for easy, convenient stocking.

## Flexonics Corporation

Flexon identifies products of Flexonics Corporation that have served industry for over 50 years.



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— FORMERLY CHICAGO METAL HOSE CORPORATION —

Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components. In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

CHICAGO METAL HOSE DIVISION

Circle No. 93 on Reader Service Card

## GRADUATES ASSIGNED TO HONEYWELL POSTS

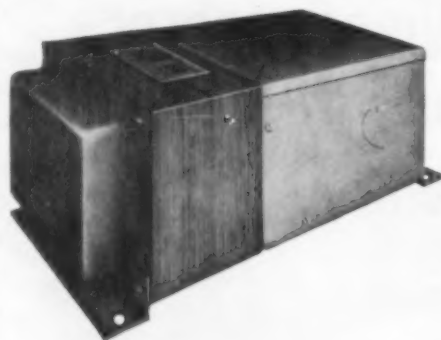
Nine salesmen and 27 service engineers, new graduates of Minneapolis-Honeywell Regulator Co.'s training school in Philadelphia have been assigned to 27 branch offices in 25 cities in the United States, Canada, and Germany.

The new sales appointees are: Charles L. Dozois, Tulsa; Jerome A. Hagen, Milwaukee; Charles R. Hartzog, New Orleans; Thomas B. Kendall and Raymond E. Sawyer, Los Angeles; David W. Kennedy,

Baltimore; Hugh F. O'Hagan, Buffalo; James R. Panonke, Charleston, and Jim E. Vermillion, Dallas.

Added to the firm's field service force are: Anthony P. Alagero, Boston; Erhardt H. Baer, International Division, Germany; Clarence E. Bixby, Albany; George M. Chockley, Charlotte; William G. Coffey, Hammond; Robert S. Dodds, Hartford; Paul N. Farnham and Donald P. Stearns, Syracuse; Harry A. Fuller and William R. Georg, Los Angeles; Robert L.

Henrioud, Greenville; William R. Kelly, Wichita, and Robert C. Knowlton, Cleveland; Jean Guy Leblanc, Montreal; George F. Lindquist, William F. Neuner, and Charles F. Wohlmacher, New York; James C. Martin and Johnnie E. McLemore, Dallas; Ullie F. Merritt and Michael A. Sanchez, Houston; Philip M. Nelson, Dayton; William L. Newton, Kansas City; Fred G. Von Schwerin, International Division, Minneapolis; Harold T. Willis, Oklahoma City; Earl C. Witty, Chicago, and Carl F. Zich, Buffalo.



IS A

## BOOST AND BUCK TRANSFORMER FOR AIR CONDITIONING APPLICATIONS

As a quick and economical method of supplying normal voltage (220, 230 or 240 volts) single phase from available under voltage circuits (197, 208 or 214 volts) this series of transformers will solve many application problems. For example, the installation of air conditioning equipment in an office or commercial building, where only lighting circuit voltage is available may require the installation of a separate circuit connected from two legs of a power line; such connection providing 208 volts single phase. This 208 voltage, not being sufficient to develop full starting torque of the 230 volt single phase motor, may cause the motor to operate constantly on starting windings and this would result in overheating and possible burn out.

The Boost and Buck series of transformers are essentially 4 winding insulated transformers in which the separate windings are interconnected so as to provide the same voltage tapping characteristics as an auto transformer. In effect the secondary winding voltage is added to the input voltage thus boosting the output 5% or 10% as desired. In addition the load capacity of the transformer is compounded in relation to its multiplied output voltage.

WRITE FOR CATALOG BB-199

### ACME ELECTRIC CORPORATION

928 WATER STREET

CUBA, NEW YORK

West Coast Engineering Laboratories: 1375 West Jefferson Blvd., Los Angeles, Calif.  
In Canada: Acme Electric Corp. Ltd., 50 Northline Road, Toronto, Ont.

**Acme**  **Electric**  
TRANSFORMERS



**THE FIRST RCA** casement window air conditioner units are now being shipped to distributors. The compact units, which fit practically all casement windows, were styled by Henry Dreyfuss, industrial designer, in two-tone gray. In the event the owner moves, a special kit will be available so that the air conditioner also can be installed in conventional double-hung windows. The new models come in 1/2 hp and 3/4 hp sizes.

### WESTINGHOUSE USING NEW VIRGINIA PLANT

A new factory near Staunton, Va., is now being used by Westinghouse Electric Corp. for the manufacture of packaged air conditioning units in 2 to 15-ton capacities. Heat pumps are also produced here.

In a recent formal opening of the plant, John A. Gilbreath, its manager, told an audience that today's market for air conditioners "is almost inexhaustible and barely scratched."

More than 400 persons are employed in the new factory which has about 300,000 sq. ft. of floor space. Air conditioning equipment in sizes larger than 20 tons is manufactured by Westinghouse in other locations.

Circle No. 94 on Reader Service Card

## OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted," \$4.50 minimum, limit 25 words. For all other classifications, \$8.00 minimum for 25 words or under, each additional word 20¢. Boldface type or all capitals, \$10.00 minimum for 25 words or under, each additional word 25¢. All classified advertising payable in advance.

### REPRESENTATIVES WANTED

**REPRESENTATIVES WANTED:** Splendid opportunity to represent, on exclusive basis, fast growing, old line industrial refrigeration company in key markets throughout the United States. Our equipment is giving service to biggest meat packers in the country. Among many items we manufacture are these famous lines: **COLDJET CEILING TYPE SPACE COOLERS** (Fit Between Rails); **LOTEMP FIN TYPE CEILING COILS** (A) Plate, (B) Spiral; **Imeco EVAPORATIVE CONDENSER**; **Imeco BLAST COOLING COILS**; **Imeco FLOOR TYPE SPACE COOLERS**. Write, giving full details to: **INDUSTRIAL MFG. & ENG. CO.**, 3033 W. Belmont Ave., Chicago 18, Ill.

### POSITIONS AVAILABLE

**CHIEF ENGINEER** — Wonderful opportunity for advancement with fast-growing, aggressive manufacturer of fans and blowers. Will be in complete charge of design and development. Excellent opportunity for creative engineer. Plant located in progressive, modern, Midwest community. Staff knows of this ad. State experience and qualifications first letter. Reply to Box 8155, Commercial Refrigeration & Air Conditioning.

**SALES ENGINEER** — Leading Manufacturer of year 'round air conditioning equipment with national distribution has opening for sales engineer well versed in all phases of heating and summer cooling. Must have experience in residential, commercial and industrial application, both forced air and boiler systems. Age preferably between 20 and 45 years. Must be willing to travel and relocate if necessary. When applying, give full resume of experience and qualifications, salary, commensurate with responsibilities. Our organization knows of this advertisement, your reply will be held in strictest confidence. Write Box 8255, Commercial Refrigeration and Air Conditioning.

### NAMES CANADIAN OUTLET

Albern Universal Ltd., Toronto, has been named Canadian distributor for Union Asbestos & Rubber Co. air conditioning products. Albern will be equipped to handle orders for units ranging in size through 60 tons.

**BUY FROM YOUR REFRIGERATION WHOLESALE**

## SALES ORGANIZATION EXPANSION PLANNED

A recruiting drive has been begun by U. S. Machine Div., Stewart-Warner Corp. to double its field sales organization. First step was the recent appointment of five regional managers.

Increased manufacturing facilities at Lebanon, Ind., and the introduction of the new Winkler line of heating and cooling products were given as the reason for the organizational expansion.

Ultimate goal will be 10 regional managers, 100 district sales managers, and 3000 franchised dealers, according to Claude A. Potts, general sales manager.

The five promoted from district ranks to regional posts are: Walter R. Leander, Indianapolis; Carl G. Lang, Naperville, Ill.; Carl L. Riddle, Norristown, Pa.; Stephen W. Boharic, Lorain, Ohio; and William E. Macneil, Abington, Mass.

In addition, nine new district men were signed and factory trained in May. They are: Henry C. Gabel, Norristown, Pa.; Paul Knobloch, Wheaton, Ill.; Paul R. Moneypenny, Warren, Ohio; Wilbur T. Fites, Alliance, Ohio; J. Rogers Leech, Rumford, R.I.; William R. Rudd, Durham, N.H.; Joseph R. Johnson, Elgin, Ill.; Wm. H. Moore, Jr., West Chester, Pa.; and John R. Speer, West Chester, Pa.

### TYWEL CHANGES NAME

Tywel Mfg. Co. has changed its name to Lewyt Air-Conditioner Corp. Tywel, which is Lewyt spelled backward, has been manufacturing built-in wall air-conditioning units for builders since early this year. Previously, the company made window units for other manufacturers on a contract basis. The contract end of the business will be continued but particular emphasis will be placed on the new built-in wall unit.

Officers for the Lewyt Air-Conditioner Corp. will be the same as those identified with Tywel. Irving Botner is treasurer and vice-president in charge of sales; Arnold Wolf is vice-president in charge of manufacturing and Madge Ferredy is secretary.

Circle No. 91 on Reader Service Card

# WITT Zone Air

ROOM UNIT  
AIR CONDITIONER



## For New and Old Construction

"Miraculously Quiet" Zone Air, ideal for hotels, motels, hospitals, offices and other applications where silence is essential. No costly duct work — no tearing out partitions in existing buildings — simply connect pipes from unit to a cooling or hot water system.

Used with direct expansion, combination heating and cooling with water or direct expansion and steam — individual control. 14 sizes: 300 to 1200 CFM. Concealed or cabinet type models.

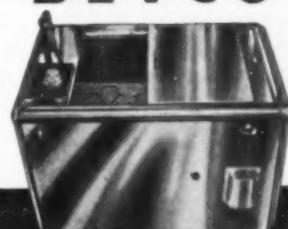
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**A. H. WITT COMPANY**  
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**WITT Coils**

OVER 30 YEARS  
RELIABLE SERVICE

# BEVCO



**QUALITY COOLERS YOU CAN FIT INTO YOUR LINE AND SELL AT A PROFIT**

### ACCESSORIES



You sell quality, trouble-free cooling in these electric units that operate wet or dry. In 3 sizes... 4, 5, 6 ft. Unobstructed interiors. Baked Enamel finish for beauty and sanitation.

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# "A-P TRAP-DRI is a real trouble stopper"

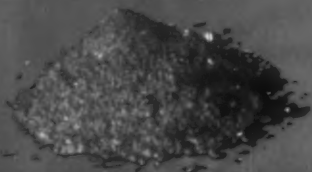
Says: SHERMAN LA VIOLETTE, owner La Violette Refrigeration Co.  
523 W. Juneau Ave., Milwaukee, Wisconsin

"W E'VE found this combination drier and filter not only stops dirt, water and acids, but it stops profitless refrigeration service calls as well. After installation, for example, Trap-Dri begins immediately to "clean up" a job by removing all sludge deposits, scale, dirt and solder. And because of the silica gel charge, Trap-Dri completely removes all moisture and acids that could cause plenty of valve trouble. Take it from me — for 100% protection — every refrigeration system should be protected by Trap-Dri. It's a real trouble stopper."

**YOU GET PROTECTION LIKE  
THIS ONLY FROM TRAP-DRI**



Filter element is the best place to collect trouble-making dirt and foreign particles — rather than in valves and lines! And, there's no appreciable pressure drop while Trap-Dri is protecting the installation.



**...BECAUSE ONLY TRAP-DRI  
HAS EXCLUSIVE DEPTH FILTERING**



- Honeycomb "depth filtration" system offers more filtering area than any other drier on the market. Installation at *outlet* prevents escape of desiccant.
- Silica gel is famous PA 400 — absorbs water and acids physically rather than chemically. 100% protection.
- Hermetically factory-sealed against moisture with double-seal plastic caps.



**DEPENDABLE  
Controls**



**TRAP-DRI IS THE BEST PROFIT PROTECTION MONEY CAN BUY!**

**A-P CONTROLS CORPORATION**

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by  
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